Issue 137
PS
1964 Series
THE PREVENTIVE MAINTENANCE MONTH
I'D SUGGEST YOU BRUSH UP ON SOME OF THE OLD, RELIABLE RECOVERY TRICKS, GENIE, OL' KID...
THAT'S THE QUICKEST WAY, SHORT OF MAGIC, TO GET OUTTA THIS MESS.
SPECIAL ARTICLE
Vehicle Recovery Feature
SEE PAGE 2
Will Eisner

Did You Hear the One . . . ?

READY OR NOT

Did you hear the one about the small town and its fire truck? It gave everybody a better, safer feeling, and saved quite a few bucks in fire insurance costs besides.

The volunteer firemen kept the truck real shiny, spic and span. And they had all the know-how for using it to fight fires.

But they were a bit weak on one thing—keeping their truck maintained. In fact, one cold winter night they were caught "flat-footed" on maintenance. It may have been the heavy summer oil that was still in the engine; or maybe the battery was just too far gone; or the engine needed a tune-up; or water in the gas froze. Anyway, she wouldn't start.

The fire was in the building right beside the firehouse. You know what happened: It spread to the firehouse. Before they could uncrate enough buckets for a bucket brigade, everything was burned—garage, fire truck and firehouse.

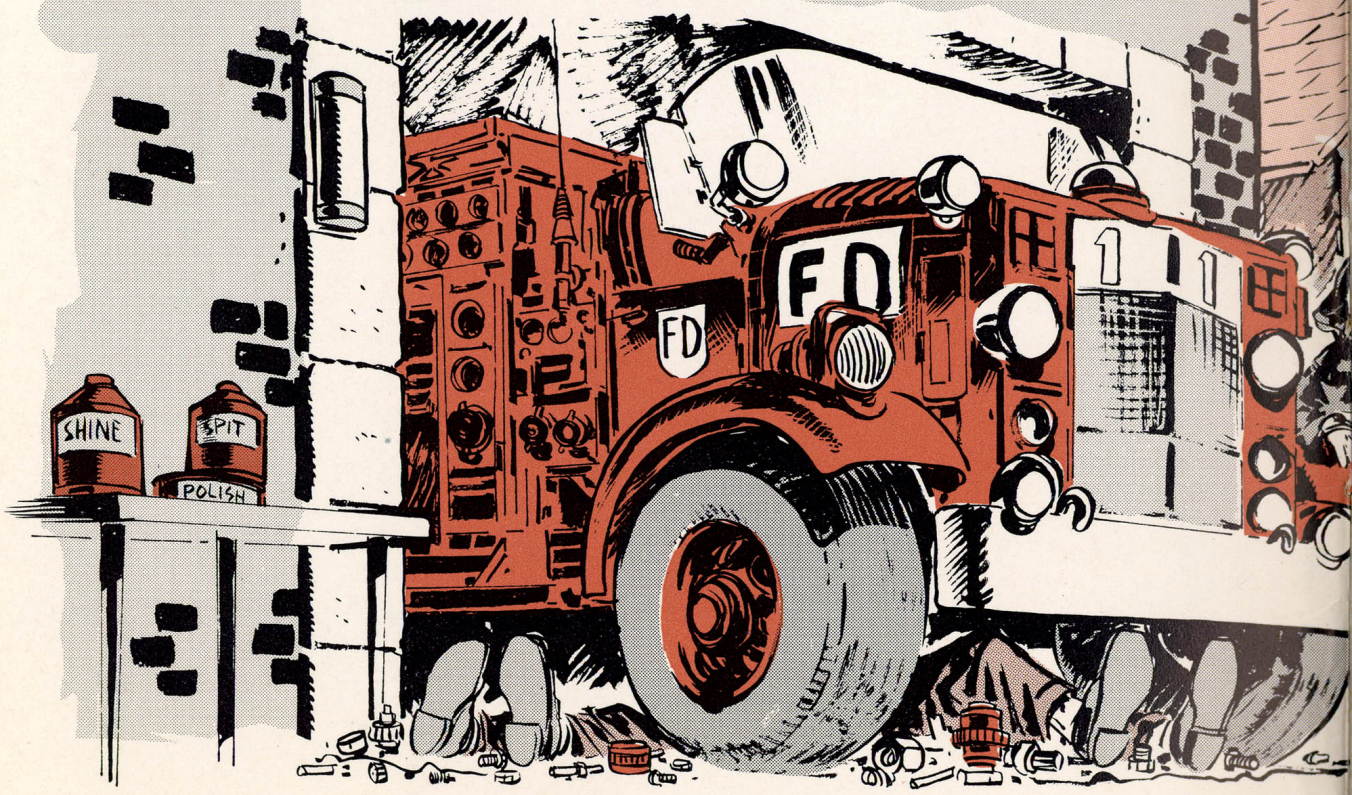
Somewhere in this story is a lesson for every soldier. In fact, the people topside of the Army have already got things set up so there'll be no "deadlined fire trucks" . . . if every soldier does his part.

Just bounce your eyeballs over these Army Regulations:

AR 220-1 —
UNIT READINESS

AR 750-10 —
MATERIEL READINESS

They set up the scoop on just what it means to be ready—combat ready.



Did You Hear the One . . . ?

READY OR NOT

Did you hear the one about the small town and its fire truck? It gave everybody a better, safer feeling, and saved quite a few bucks in fire insurance costs besides.

The volunteer firemen kept the truck real shiny, spic and span. And they had all the know-how for using it to fight fires.

But they were a bit weak on one thing—keeping their truck maintained. In fact, one cold winter night they were caught "flat-footed" on maintenance. It may have been the heavy summer oil that was still in the engine; or maybe the battery was just too far gone; or the engine needed a tune-up; or water in the gas froze. Anyway, she wouldn't start.

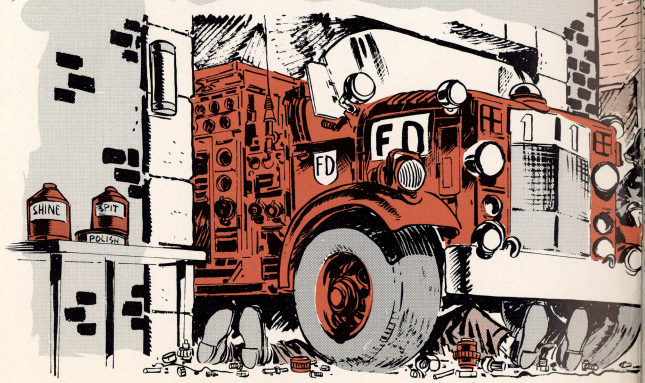
The fire was in the building right beside the firehouse. You know what happened: It spread to the firehouse. Before they could uncrate enough buckets for a bucket brigade, everything was burned—garage, fire truck and firehouse.

Somewhere in this story is a lesson for every soldier. In fact, the people topside of the Army have already got things set up so there'll be no "deadlined fire trucks" . . . if every soldier does his part.

Just bounce your eyeballs over these Army Regulations:

AR 220-1 –
UNIT READINESS
AR 750-10 –
MATERIEL READINESS

They set up the scoop on just what it means to be ready—combat ready.



Then you need to round up, for your unit's equipment, the Equipment Serviceability Criteria (Technical Bulletins and TM Changes listed in Circular 750-14 dated 19 Nov 63 and also listed on pages 10-11 of PS Issue 131 and page 28 of PS Issue 133), and you'll be in business.

You (or your CO) can use the ESC (called "Traffic-Light" pubs because of the Green, Amber, Red idea) to determine if your equipment is ready to go—to fight.

If your equipment's not ready—like that deadlined fire truck—the town could burn down, so to speak.

PS

Published by the Department of the Army for the information of organizational maintenance and supply personnel. Distribution is made through normal publication channels. Within limits of availability, older issues may be obtained direct from U. S. Army Maintenance Board, Attn.: PS Magazine, Fort Knox, Kentucky 40121.

THE PREVENTIVE MAINTENANCE MONTHLY
Issue No. 137 1964 Series

IN THIS ISSUE

GROUND MOBILITY 2-27

Special Feature—Vehicle Recovery 2-17

TRACKS		WHEELS	
M113	18-19	M543	23
M60A1	20-22	M62	23
		M151	24-25

GENERAL

Wheel Assembly Removal	24-25
Tank Safety	26-27
Fuel Transport	27

FIREPOWER 37-43

Breechblock	37	Nike Hercules	40-42
Hawk	38-40	M14	43
Nike	40, 42	M60 Aircraft Mount	42

AIR MOBILITY 44-51

OH-13	44-45	Corrosion	48-49
UH-1	46	Grease Cans	50-51
M60 MG Mount	47	Hardware	50-51

COMMUNICATIONS 52-59

AN/GRA-39	52-54	AN/GRC-46	57
AN/PDR-39	55	RT-66 thru 68	58-59
AN/GRC-26D	56	AN/VRC-19	59

GENERAL AND SUPPLY

M15 Apparatus	60	Hollingsworth Gen.	63
Screwdrivers	61	Tire Recap	64
PU-286 Gen. Set	62	New Publications	28
6000-lb Forklift	63	Supply	23, 42, 44, 56, 57, 61, 63

Use of funds for printing of this publication has been approved by Headquarters, Department of the Army, 4 April 1962. DISTRIBUTION: In accordance with requirements submitted on DA Form 12-4.

PS wants your ideas and contributions, and is glad to answer your questions. Name and address are kept in confidence. Just write to:

Sgt. Half-Mast,
PS Magazine,
Fort Knox, Ky.
40121

Then you need to round up, for your unit's equipment, the Equipment Serviceability Criteria (Technical Bulletins and TM Changes listed in Circular 750-14 dated 19 Nov 63 and also listed on pages 10-11 of PS Issue 131 and page 28 of PS Issue 133), and you'll be in business.

You (or your CO) can use the ESC (called "Traffic-Light" pubs because of the Green, Amber, Red idea) to determine if your equipment is ready to go—to fight.

If your equipment's not ready—like that deadlined fire truck—the town could burn down, so to speak.

PS

Published by the Department of the Army for the Information of organizational maintenance and supply personnel. Distribution is made through normal publication channels. Within limits of availability, older issues may be obtained direct from U. S. Army Maintenance Board, Attn.: PS Magazine, Fort Knox, Kentucky 40121.

THE **PREVENTIVE MAINTENANCE** MONTHLY

Issue No. 137 1964 Series

IN THIS ISSUE

GROUND MOBILITY 2-27

Special Feature—Vehicle Recovery 2-17

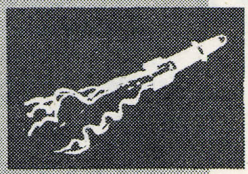
TRACKS
M113 18-19
M60A1 20-22

WHEELS
M543 23
M62 23
M151 24-25

GENERAL
Wheel Assembly Removal 24-25
Tank Safety 26-27
Fuel Transport 27

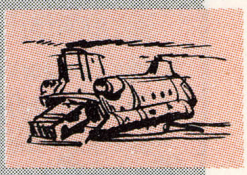
FIREPOWER 37-43

Breechblock 37
Hawk 38-40
Nike 40, 42
Nike Hercules 40-42
M14 43
M60 Aircraft Mount 42



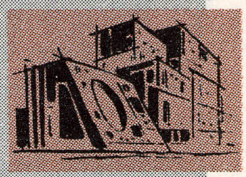
AIR MOBILITY 44-51

OH-13 44-45
UH-1 46
M60 MG Mount 47
Corrosion 48-49
Grease Cans 50-51
Hardware 50-51



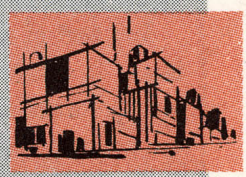
COMMUNICATIONS 52-59

AN/GRA-39 52-54
AN/PDR-39 55
AN/GRC-26D 56
AN/GRC-46 57
RT-66 thru 68 58-59
AN/VRC-19 59



GENERAL AND SUPPLY

M15 Apparatus 60
Screwdrivers 61
PU-286 Gen. Set 62
6000-lb Forklift 63
Hollingsworth Gen. 63
Tire Recap 64
New Publications 28
Supply 23, 42, 44, 56, 57, 61, 63

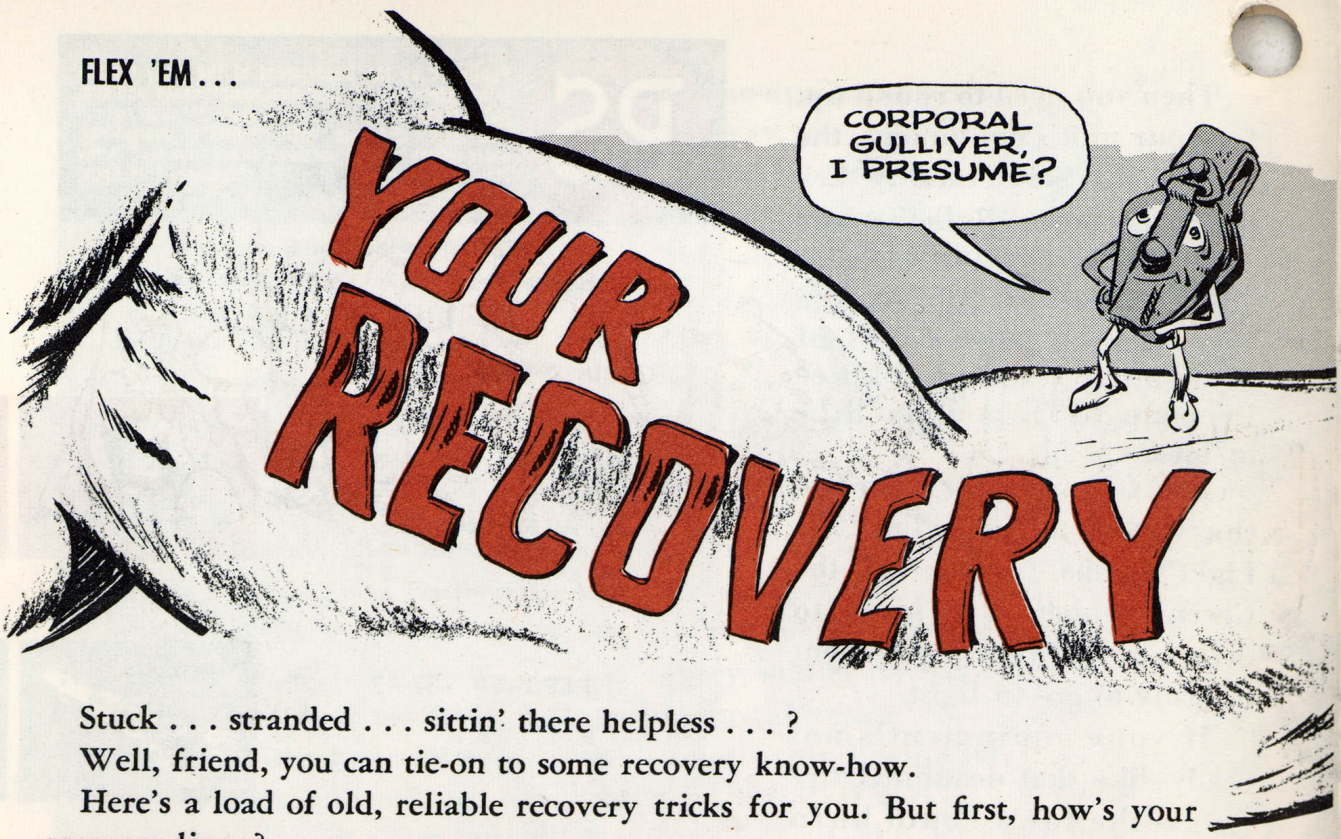


Use of funds for printing of this publication has been approved by Headquarters, Department of the Army, 4 April 1962. DISTRIBUTION: In accordance with requirements submitted on DA Form 12-4.

PS wants your ideas and contributions, and is glad to answer your questions. Name and address are kept in confidence. Just write to:

Sgt. Half-Mast,
PS Magazine,
Fort Knox, Ky.
40121

FLEX 'EM...



Stuck . . . stranded . . . sittin' there helpless . . . ?

Well, friend, you can tie-on to some recovery know-how.

Here's a load of old, reliable recovery tricks for you. But first, how's your recovery lingo?

MECHANICAL ADVANTAGE—That's what you have when you know your rigging . . . cables, blocks, anchors . . . when you know how to set-up tackle to increase your pulling power.

CABLES—Deliver your winch's power to the trapped load.

BLOCKS—They change the direction of pull, and multiply your pulling force. There's the common block (you reeve—thread—the cable through it) and the snatch block (its shell opens up to take the cable).

They come in various shapes and sizes, and are called single, double, or triple, which tells how many sheaves (grooved pulleys) a block has . . . how many lines it can take, that is.

The more lines you rig the bigger your mechanical advantage will be, natch. 'Cause with tackle (like with most pull) with two or more forces pulling in parallel, the total pulling power adds up to the sum of the forces (less what's lost through friction in the blocks).

TACKLE—Cable (or rope) and blocks rigged-up for pulling or lifting is your tackle. The individual tackle lines are usually identified this way:

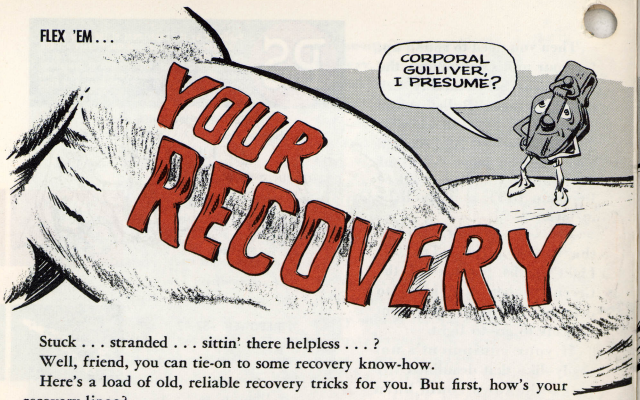
Any part of the cable between the recovery-power and the block is a **fall line.** Cable between blocks is a **return line.** Cable between blocks and the anchor, and between the blocks and the load are **dead lines.** (A dead line is usually called the weakest part of a rigging—since it takes the greatest amount of strain.)

The tackle advantage on a load depends on the number of lines supporting the load. That is—two lines give you a 2-to-1 advantage, three lines a 3-to-1 advantage, four lines a 4-to-1 advantage. A single line is a direct pull.

SNUBBING LINE—A check line. It's used to steady a suspended or moving load.

ANCHORS—Hold your recovery-power in place when you're pulling. You may have the ready-made kind (like the Holmes ground anchor set), or use trees, stumps, a deadman, earth embankment, or lasso the nearest and sturdiest thing which'll give you a strong hold.

FLEX 'EM...



Stuck . . . stranded . . . sittin' there helpless . . . ?

Well, friend, you can tie-on to some recovery know-how.

Here's a load of old, reliable recovery tricks for you. But first, how's your recovery lingo?

MECHANICAL ADVANTAGE—That's what you have when you know your rigging . . . cables, blocks, anchors . . . when you know how to set-up tackle to increase your pulling power.

CABLES—Deliver your winch's power to the trapped load.

BLOCKS—They change the direction of pull, and multiply your pulling force. There's the common block (you reeve—thread—the cable through it) and the snatch block (its shell opens up to take the cable).

They come in various shapes and sizes, and are called single, double, or triple, which tells how many sheaves (grooved pulleys) a block has . . . how many lines it can take, that is.

The more lines you rig the bigger your mechanical advantage will be, natch. 'Cause with tackle (like with most pull) with two or more forces pulling in parallel, the total pulling power adds up to the sum of the forces (less what's lost through friction in the blocks).

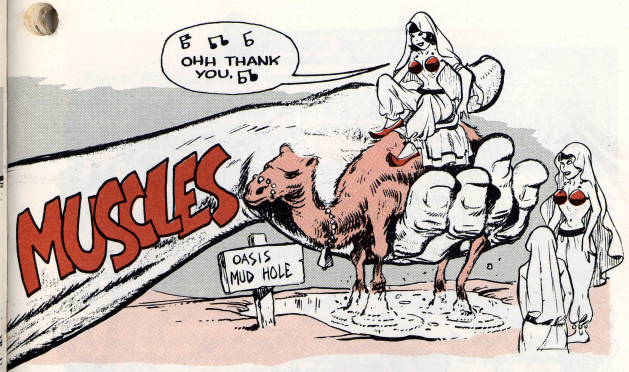
TACKLE—Cable (or rope) and blocks rigged-up for pulling or lifting is your tackle. The individual tackle lines are usually identified this way:

Any part of the cable between the recovery-power and the block is a **fall line.** Cable between blocks is a **return line.** Cable between blocks and the anchor, and between the blocks and the load are **dead lines.** (A dead line is usually called the weakest part of a rigging—since it takes the greatest amount of strain.)

The tackle advantage on a load depends on the number of lines supporting the load. That is—two lines give you a 2-to-1 advantage, three lines a 3-to-1 advantage, four lines a 4-to-1 advantage. A single line is a direct pull.

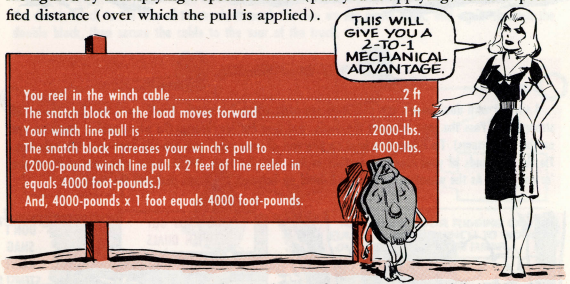
SNUBBING LINE—A check line. It's used to steady a suspended or moving load.

ANCHORS—Hold your recovery-power in place when you're pulling. You may have the ready-made kind (like the Holmes ground anchor set), or use trees, stumps, a deadman, earth embankment, or lasso the nearest and sturdiest thing which'll give you a strong hold.

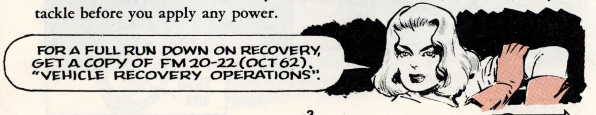


YOUR PULLING FORCE

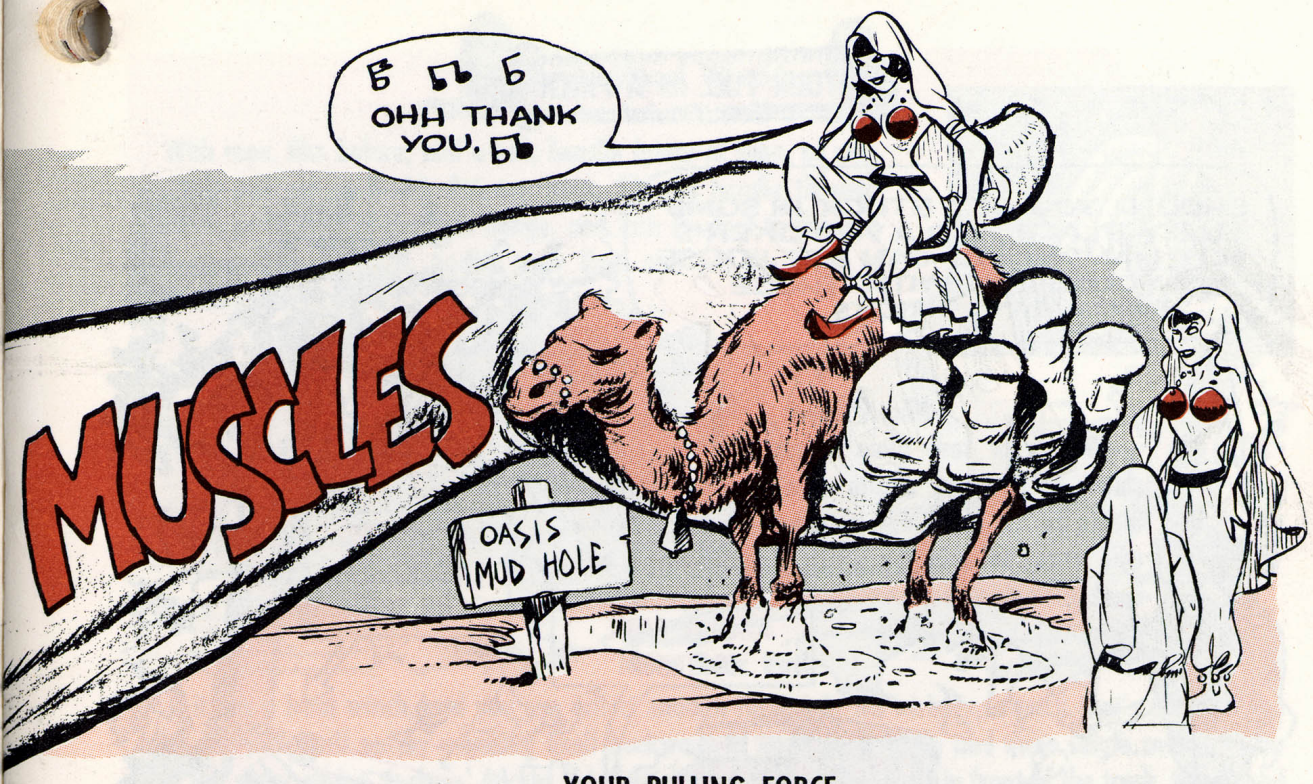
The force your tackle puts on a load, is often expressed in foot-pounds, and it's figured by multiplying a specified force (pull you're applying) times a specified distance (over which the pull is applied).



Just one more thing . . . the big fat by-word in any recovery job is CHECK-AND-DOUBLE-CHECK. Use only stout lines and anchors, and re-check your tackle before you apply any power.

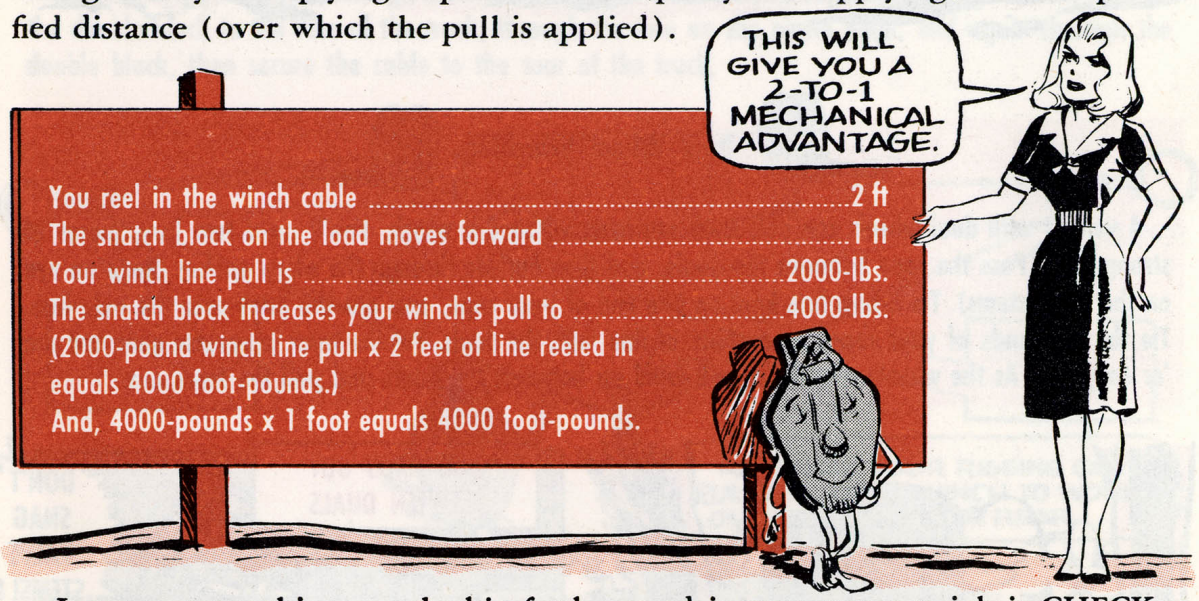


MORE

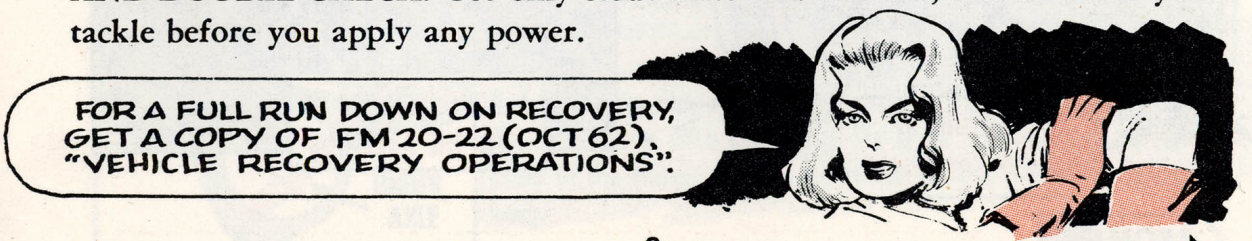


YOUR PULLING FORCE

The force your tackle puts on a load, is often expressed in foot-pounds, and it's figured by multiplying a specified force (pull you're applying) times a specified distance (over which the pull is applied).

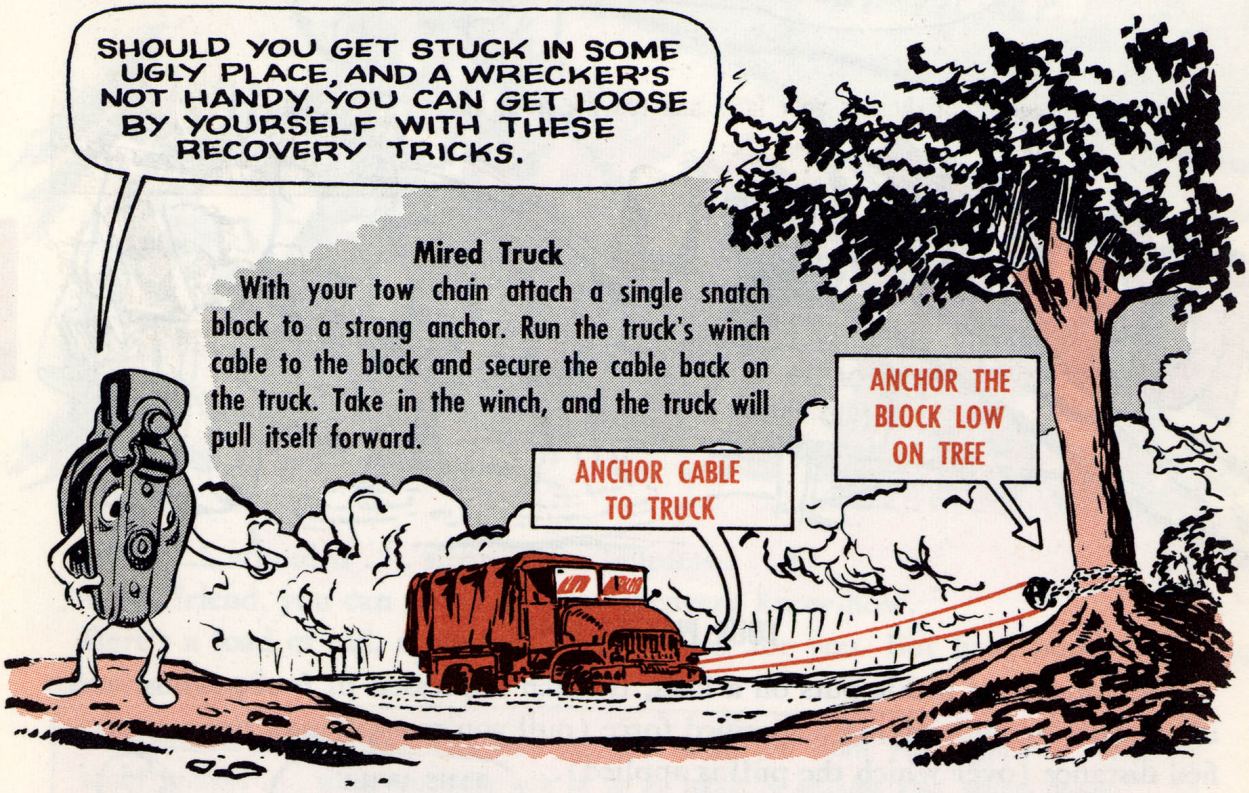


Just one more thing . . . the big fat by-word in any recovery job is CHECK-AND-DOUBLE-CHECK. Use only stout lines and anchors, and re-check your tackle before you apply any power.



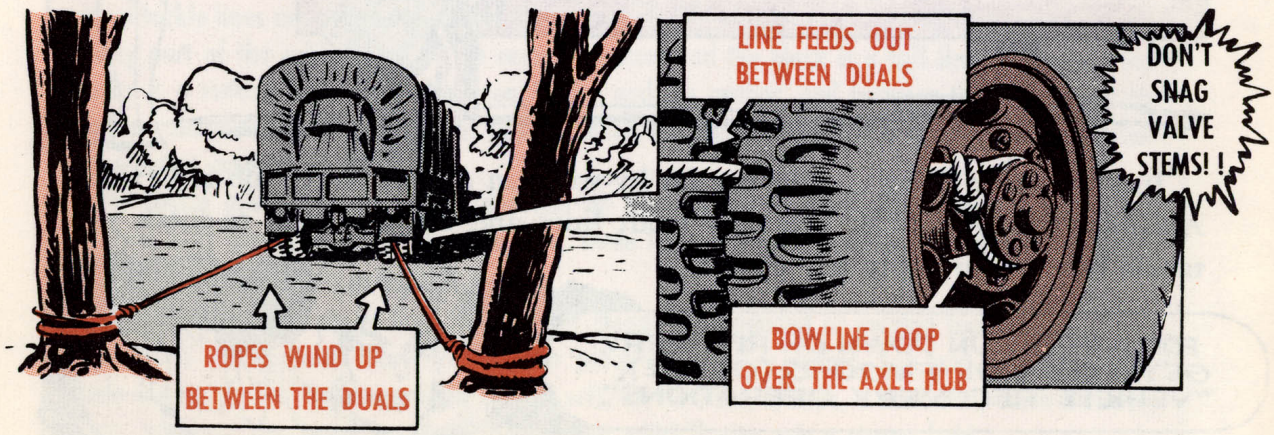
P.S. MORE

YOUR PULL IN A PINCH



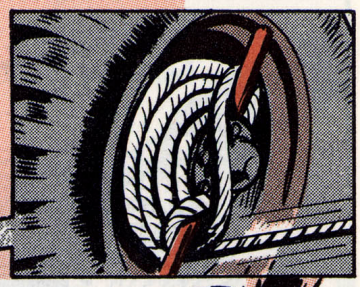
Dual Wheel Winching

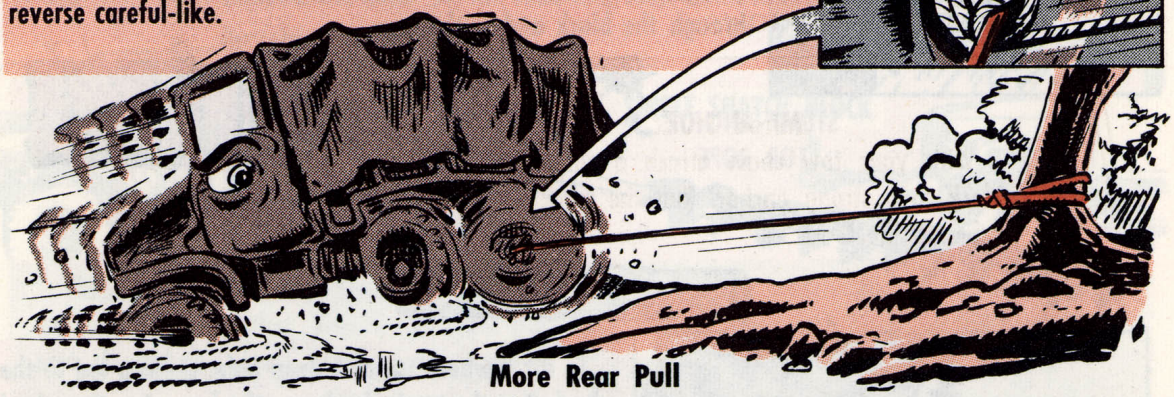
A vehicle with dual wheels can pull itself out even without a winch. You'll need two long pieces of strong rope. Pass the rope between the duals, and then outside through the wheel spokes (keep an eye on the valve stems). Tie a bow-line knot on one end of your rope, and put the knot over the axle hub. Tie the free ends of your ropes to anchors in line with the duals. Put the truck in reverse gear and run 'er easy like. As the wheels spin the rope'll wind up between the duals and pull the truck out.



Single Wheel Winching

With rope, like before, and a jack handle (piece of pipe, or rod) you can pull out an M135, 2½-ton truck. Slip the handle through the hole in the end of the axle flange, and lash the tool to the hub with a figure-eight knot. Anchor your lines and run the truck in reverse careful-like.

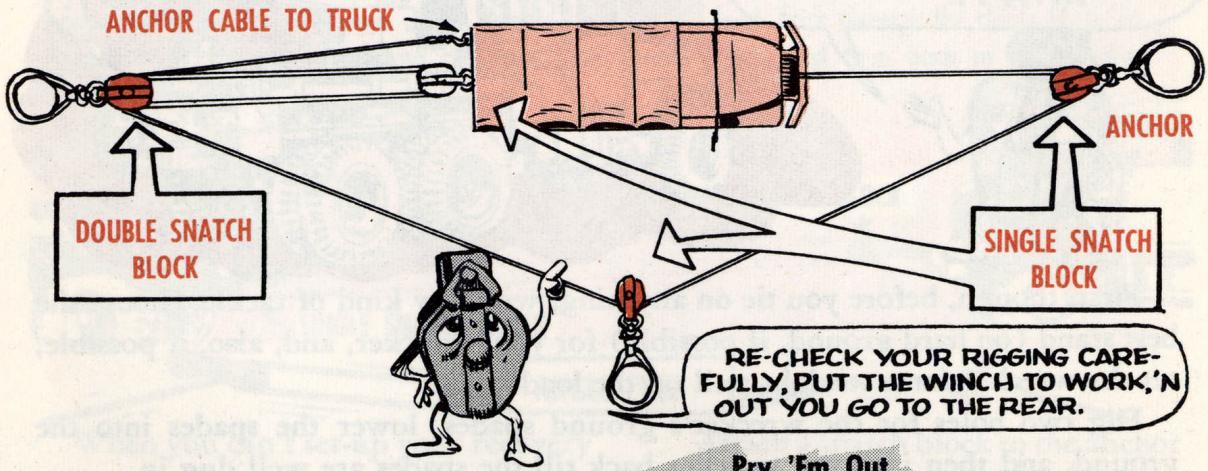




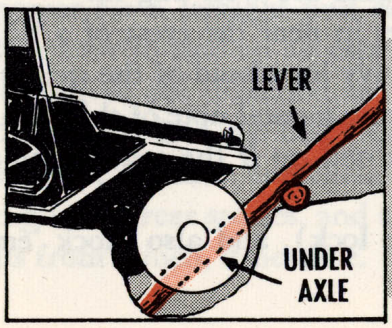
More Rear Pull

If it has a front winch, and you can collect enough rigging in the vicinity, a truck that's gone off the road can pull itself out by winching itself backward. It takes one double and three single snatch blocks and the usual strong anchors. Anchor the first single block a short ways in front of the truck, the second one off to the side (away from the road), and the third single block to pintle hook on the rear of the truck. Anchor the double block a short distance to the rear of the truck.

Rig the winch cable first through the block in front of the truck, through the one on the side, through the double block to the rear of the truck, through the one on the pintle hook, and again through the double block, then secure the cable to the rear of the truck.



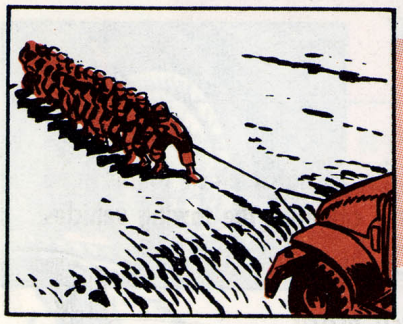
Pry 'Em Out



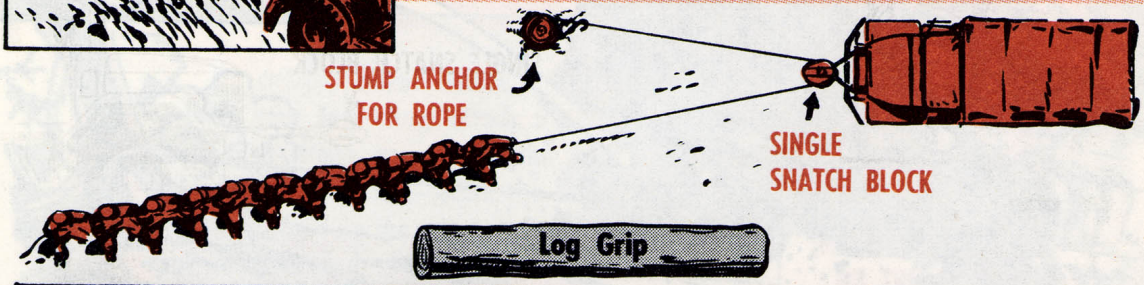
One or more strong poles, or timbers, for levers, and some manpower can pry out a truck that's gone head-first into a narrow ditch. Pivot the lever on something sturdy (log, stump, etc.). Rig the lever under the bumper for the first lift, if need be. Block up vehicle after first lift, re-rig the lever (try for under the axle) and pry up again. The size of the ditch, length of the lever, and pushing power are some of the things that decide the times you'll have to re-rig the lever.

PS MORE

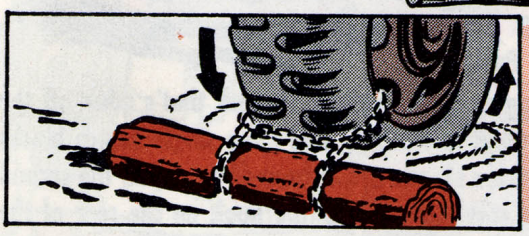
Man-Power



When you're without trustworthy mechanical power, 15 to 20 men on a rope provide a hefty pull. Put all the men on one side of the rope, and keep the line from under-foot. To give the men a 2-to-1 advantage anchor one end of the rope in line with the load. Attach a single snatch block to the load. Run the rope from the anchor through the block and to the men.

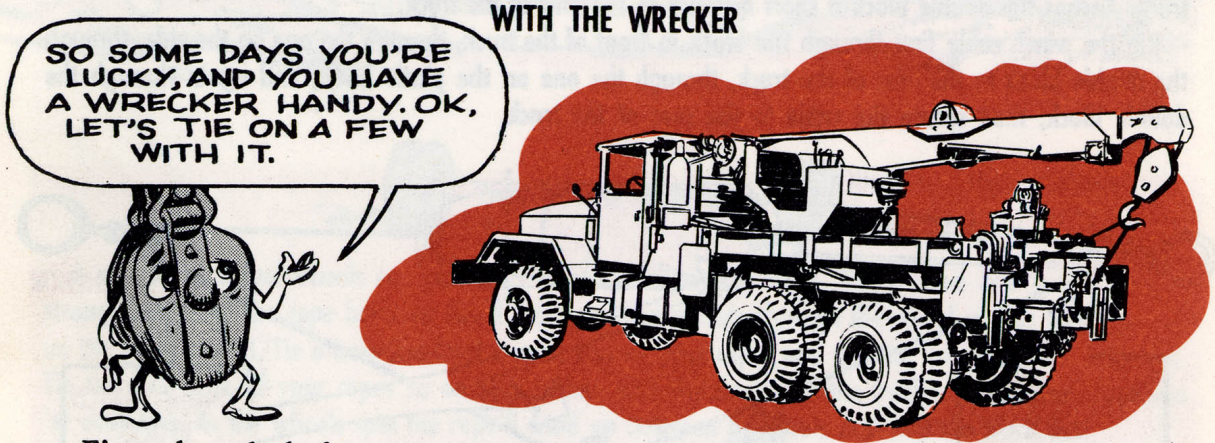


Log Grip



To lift a wheel out of a deep hole, chain a log to the wheel. Run the truck slowly; as the log grips, the wheel will raise up. You set the brakes, have the wheels blocked, and the hole filled with rocks or blocked with a log, before you remove the log from the wheel.

WITH THE WRECKER



First, though, before you tie on anything, with any kind of tackle, choose the best stand (on hard ground, if possible) for your wrecker, and, also, if possible, set the wrecker for a straight pull on the load.

Dig two holes for the wrecker's ground spades, lower the spades into the ground, and then inch the wrecker back till the spades are well dug in.

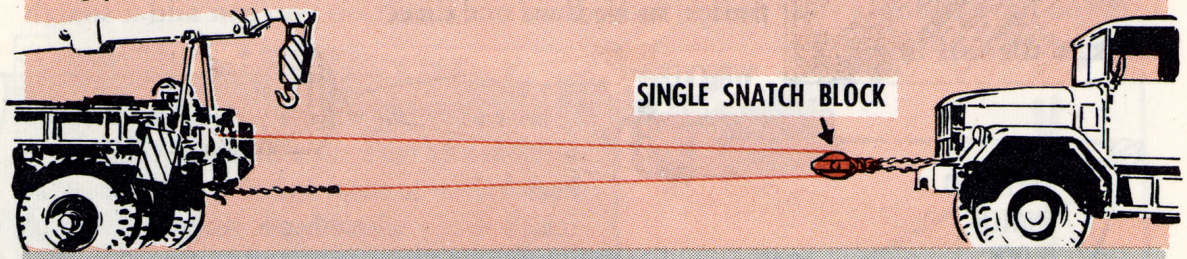
With any recovery vehicle—when digging spades in near the crest of a hill or on an embankment or on soft ground, bury a heavy log ahead of the spades, and then stake the log with pickets. Best make a strong mental note of this. You can see where the recovery vehicle and crew might end up if the spades don't grab a good hold.

Lock the wrecker's wheels (set the electric brake lock), and also block 'em with logs, rocks, chocks, or what-have-you.

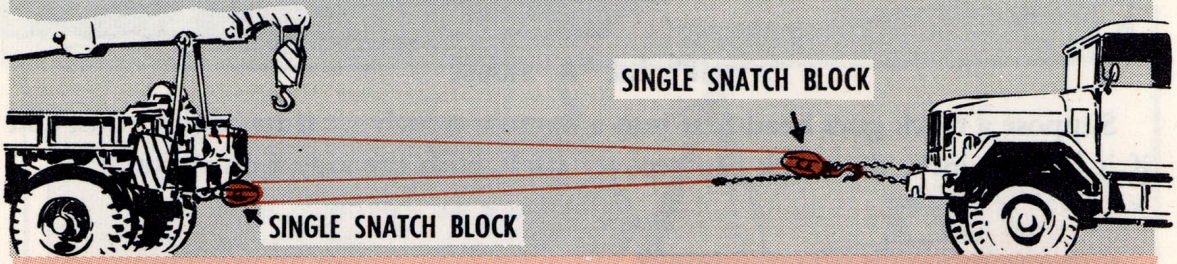
BASIC HOOK-UPS

These hook-ups are OK for a wrecker, tow truck, or recovery vehicles, and, properly put together, they'll help you recover just about any wheeled or tracked vehicle that's worth taking home.

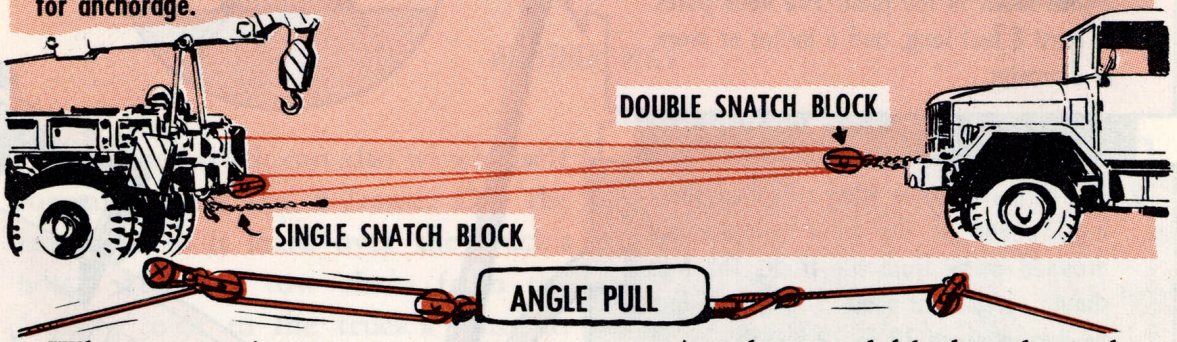
The Two-Part Line—This is your simplest hook-up. Just attach a snatch block to the load. Rig your winch cable to the block on the load and then secure the cable on the towing vehicles.



Three-Part Line—This gives you a heftier pull. It takes two snatch blocks. One at the load and one at the wrecker. Your winch cable goes first through the snatch block on the load, then back through the snatch block on the wrecker, and again to the load where you secure it.



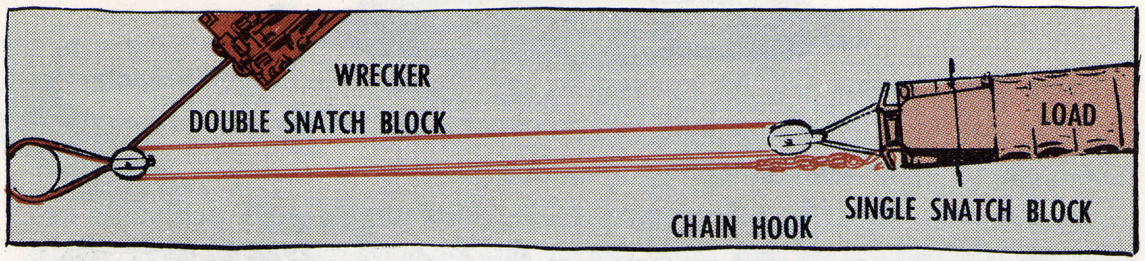
Four-Part Line—This one's for even greater pull. It calls for two snatch blocks, also. A double-sheave snatch block for the load and a single-sheave snatch block for the wrecker. The winch line goes first through one sheave of the double block on the load, back through the single block on the wrecker, through the second sheave on the double block, and then back to the wrecker for anchorage.



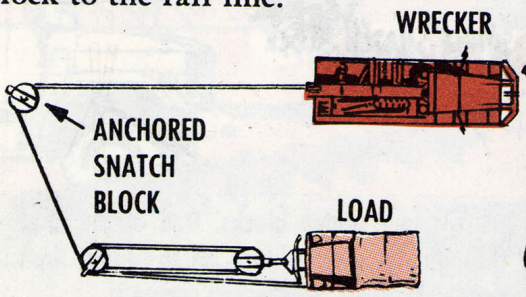
When you can't set-up your recovery power for a straight pull on the load, you have to line-up an especially good anchor in the direction the load must move, and find the best possible stand for your wrecker, and anchor it there—dig in the rear spades, and anchor it by its front winch, if need be.

Attach a snatch block to the anchor in line with the load, and another one on the load. Reeve the rear winch cable first through the block on the anchor, then through the block on the load, take the cable through the block on the anchor again, and then return it to the load and secure it.

PS MORE



If you have to angle your pull in more than one direction you can add a snatch block to the fall line.



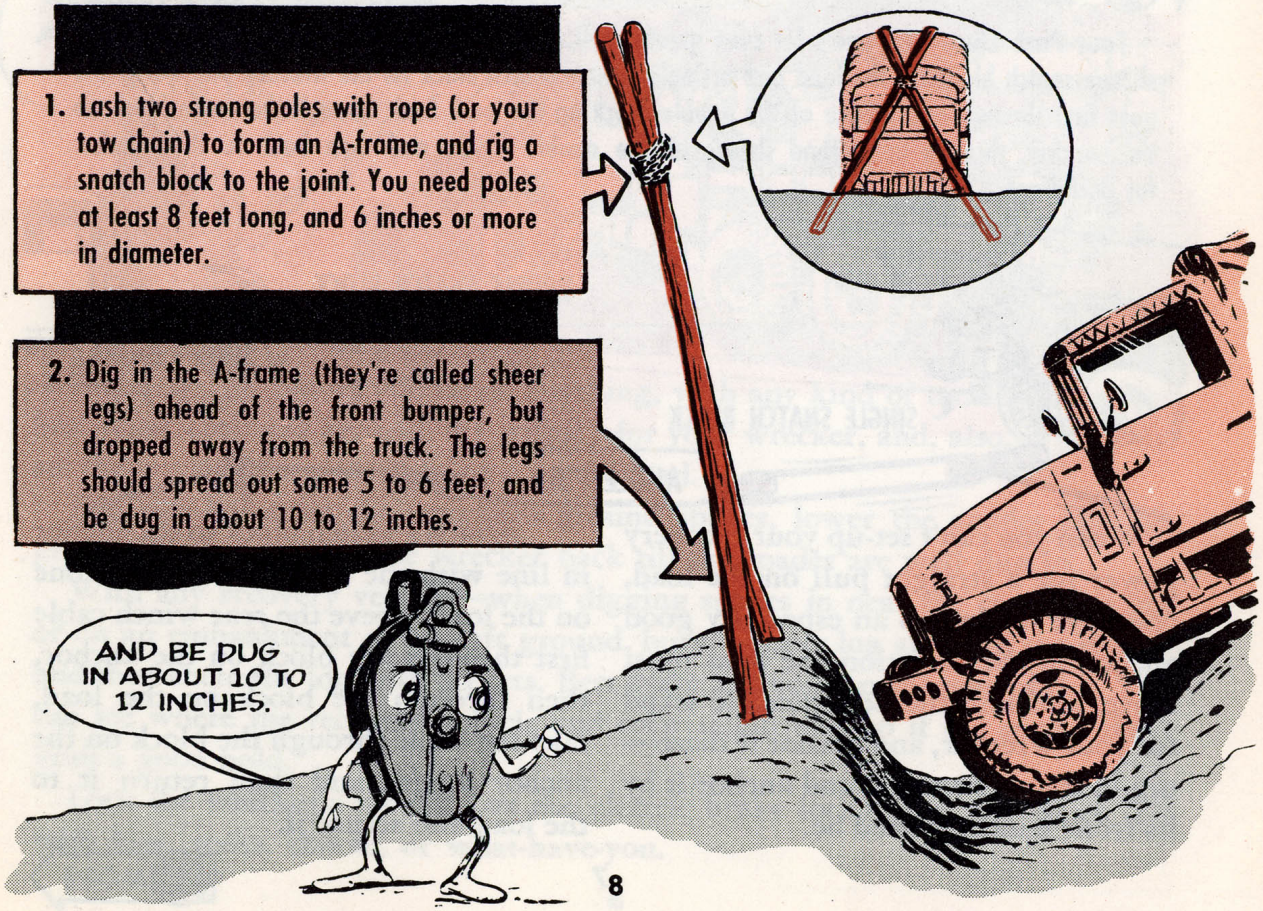
Move everything and everyone out of the angled area when the cables are under stress. Cables have been known to snap. And when that happens the cable's deadly whiplash can easily slice through humans, trees, equipment, and anything else within its reach. So pick a spot at least as far away as the length of the paid-out cable for any on-lookers or any baggage you may've had to unload.

TRY THE "A" FRAME

Suppose a truck goes head-first into a narrow trench . . . if its engine runs, and if it has a winch, the truck can recover itself with the aid of an A-frame.

1. Lash two strong poles with rope (or your tow chain) to form an A-frame, and rig a snatch block to the joint. You need poles at least 8 feet long, and 6 inches or more in diameter.

2. Dig in the A-frame (they're called sheer legs) ahead of the front bumper, but dropped away from the truck. The legs should spread out some 5 to 6 feet, and be dug in about 10 to 12 inches.



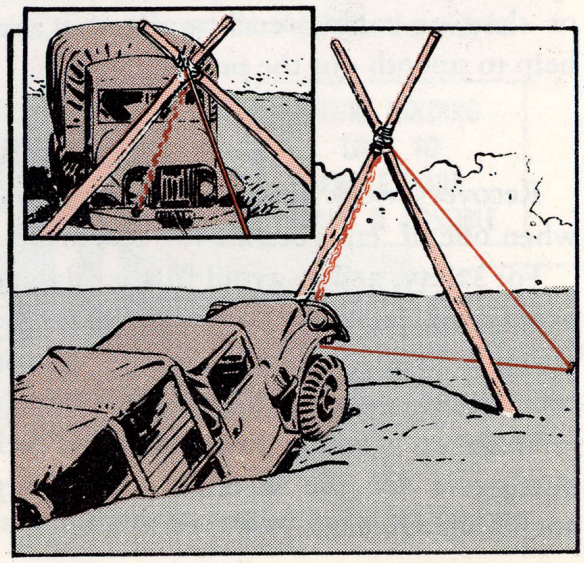
3. Run the truck's winch cable to the snatch block on the A-frame and then anchor the cable on the truck's bumper.

4. Tie a snubbing line from the frame joint to a nearby anchor. Measure the slack in the snubbing line carefully. It has to be loose enough to allow the frame to be lifted upright, and tipped over the truck's hood as the truck is lifted out.

5. Reel in the winch until the truck's wheels clear the trench. Then back out slowly. When you've got the truck's front end safely away from the trench, un-hitch the rig.

ANOTHER WAY

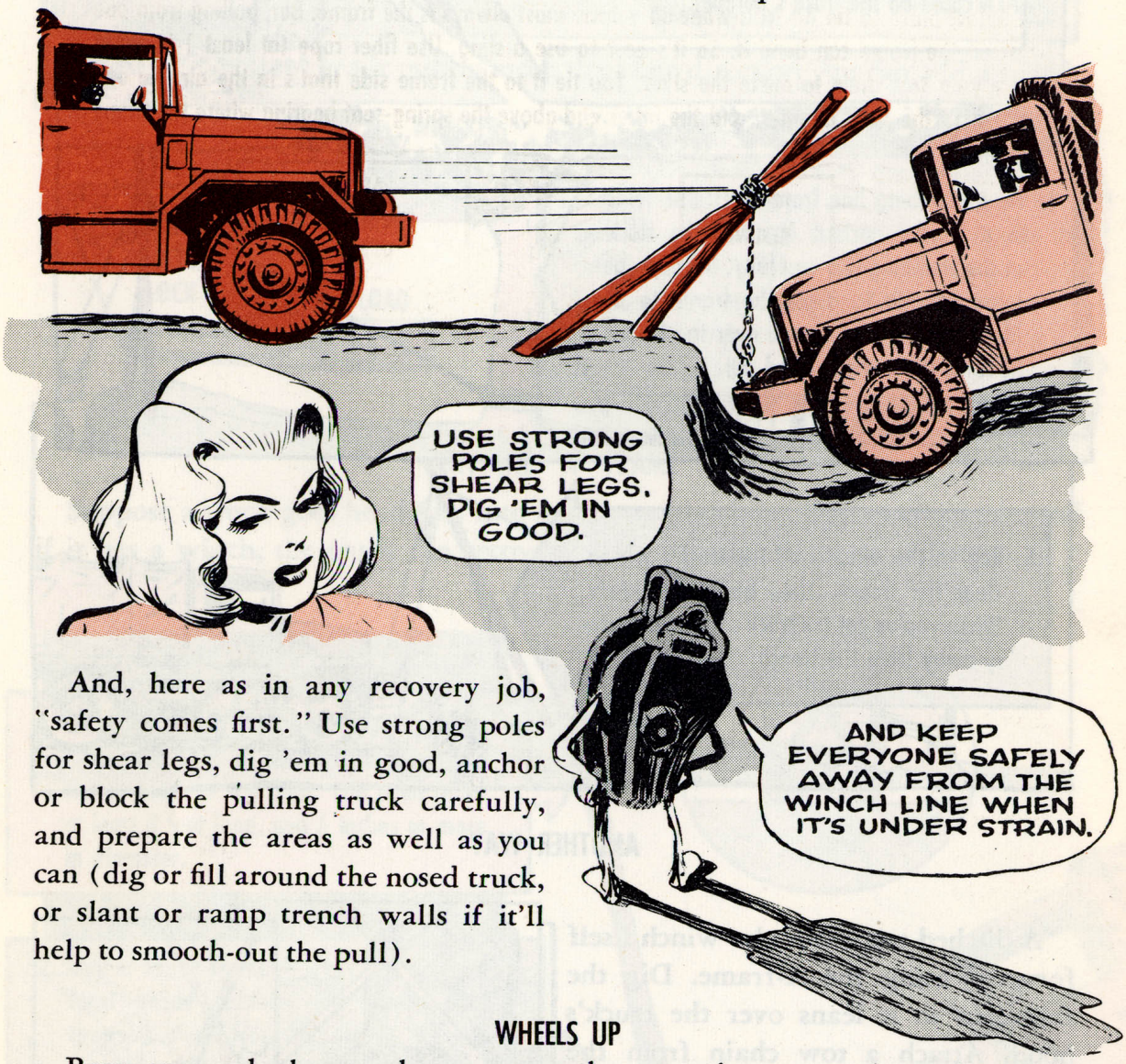
A ditched truck can also winch itself forward using the A-frame. Dig the frame in so it leans over the truck's hood. Attach a tow chain from the frame's joint to the truck's bumper. Run the winch line through a snatch block anchored nearby, in front of the load, and bring the cable back and tie it to the joint of the A-frame. As you pay in cable the frame will lift up taking the truck's front end with it. Un-rig the frame and pull the truck on out.



P.S. MORE

If the ditched truck has a dead engine and no winch it can be pulled out with another truck and the help of an A-frame.

Dig in the frame, as before, but this time away out in front of the truck. Run the other truck's cable to the A-frame joint (hitch it above the joint) and then attach the cable's end to the ditched truck's front bumper.



And, here as in any recovery job, "safety comes first." Use strong poles for shear legs, dig 'em in good, anchor or block the pulling truck carefully, and prepare the areas as well as you can (dig or fill around the nosed truck, or slant or ramp trench walls if it'll help to smooth-out the pull).

WHEELS UP

Recovery work always takes sweat . . . but sometimes more than others. Like when one of 'em goes all the way over, or lands on its side.

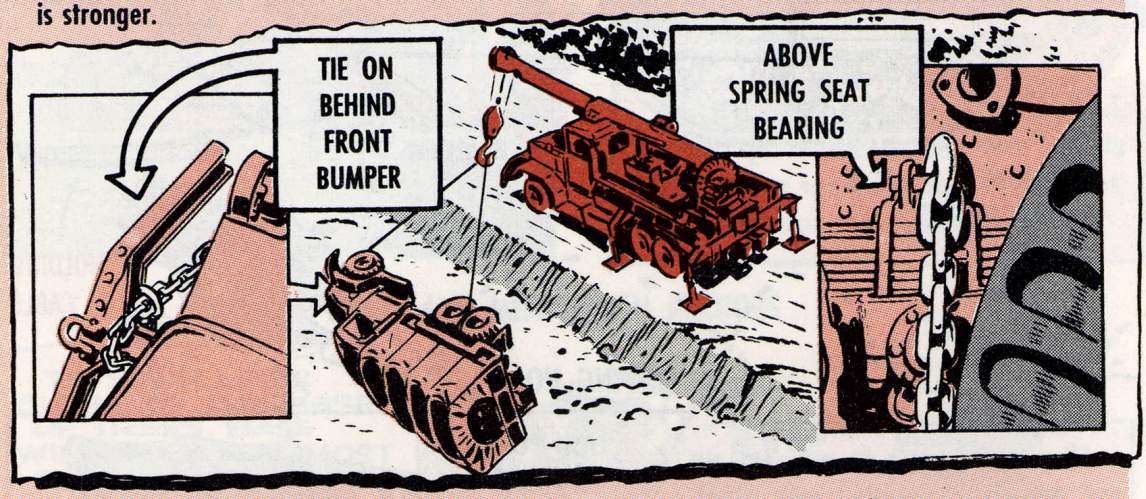
For safety, and to avoid further damage, this misfortune calls for two separate operations. First, it's best to get the vehicle right-side up again, and then you set-up to haul it out. Also, it takes two sources of power. One to roll the vehicle over, another for holding it to check a crash landing as you pull it over.

With an up-side down wheeled vehicle the recovery job usually means outriggers for the wrecker . . . to keep it from toppling over . . . and plenty anchorage.

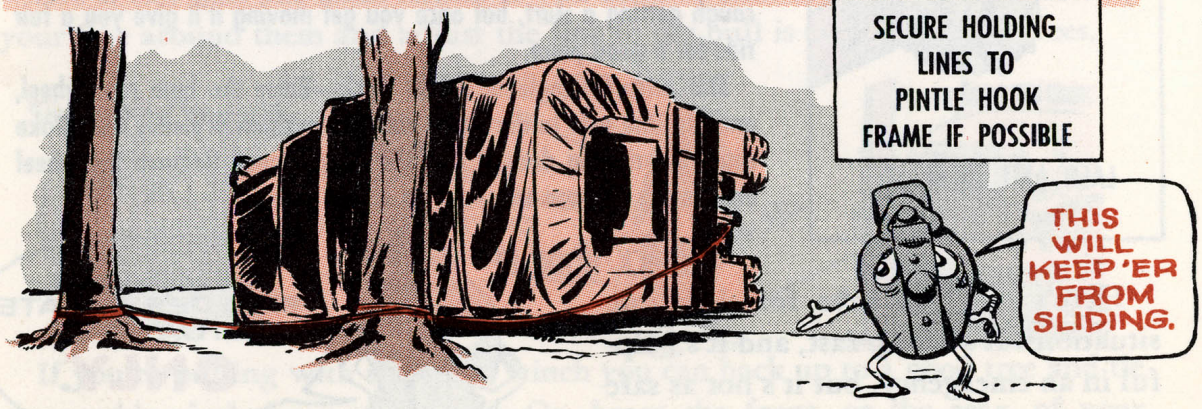
Also, with any over-turned vehicles, watch for spilled fuel. Mark off a "no-smoking" area before you get down to the serious wrestling.

It takes a lot of force to pull one back on its feet, but with care you can roll one over with few recovery bruises.

1. The safest place to tie on to a wheeled vehicle most always is the frame. But, pulling from one point on the frame can bend it. So it's best to use a sling. Use fiber rope (at least 1-in rope) or use your tow chain to make the sling. You tie it to the frame side that's in the air. Tie one end behind the front bumper, and the other end above the spring-seat bearing where the frame is stronger.



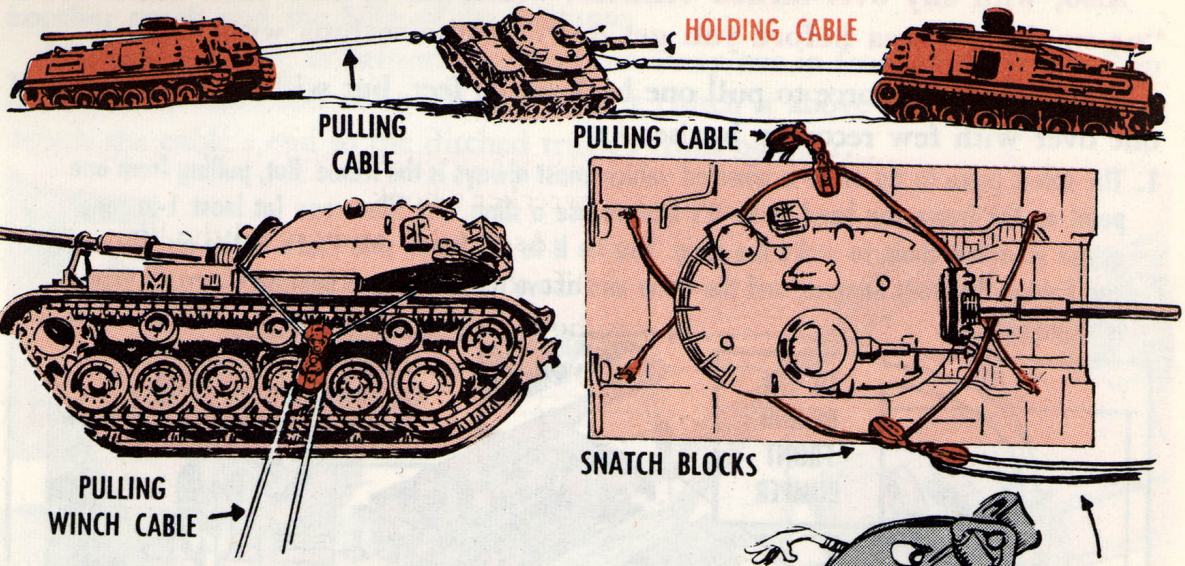
2. Tie on a second sling at the same points as the first, for the holding lines that'll ease the truck's drop as it rolls over. (Good holding lines will help prevent damage to suspension, wheels, etc.). Power for these lines can be the front winch of another vehicle, or strong ropes snubbed around trees.
3. The ground's condition, as always, has a lot to do with your other preparations for the job. For example, you may have to fill-in, dig-out, or otherwise repair the spot where it's to land up-right.
4. Soft ground, on the other hand, will help you hold the truck as you start to pull it over. If you're on hard ground, though, the truck may just slide with the pull. Holding lines from the pintle hook, frame or towing eyes, to trees, stakes, or another vehicle, should do the trick for you here.

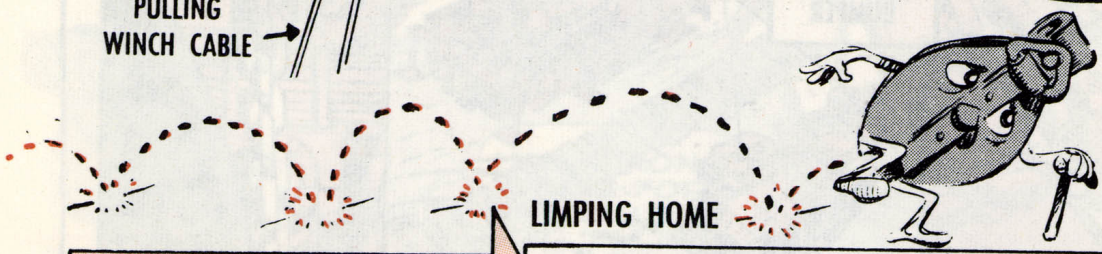


5. After you've righted the truck you'll likely have to reposition the wrecker before you hook-up your tackle to pull the truck out.

PS MORE

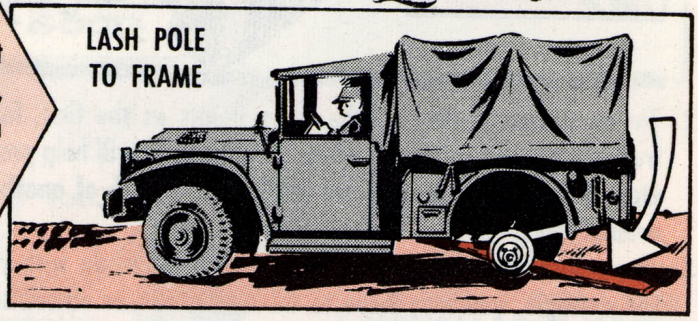
RIGHTING A TRACKED VEHICLE

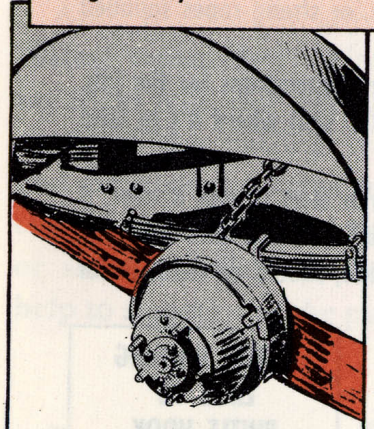




LIMPING HOME

After you struggle to pull 'em out you may find a busted rear wheel, damaged axle, or a flat. Well, you can still get away.



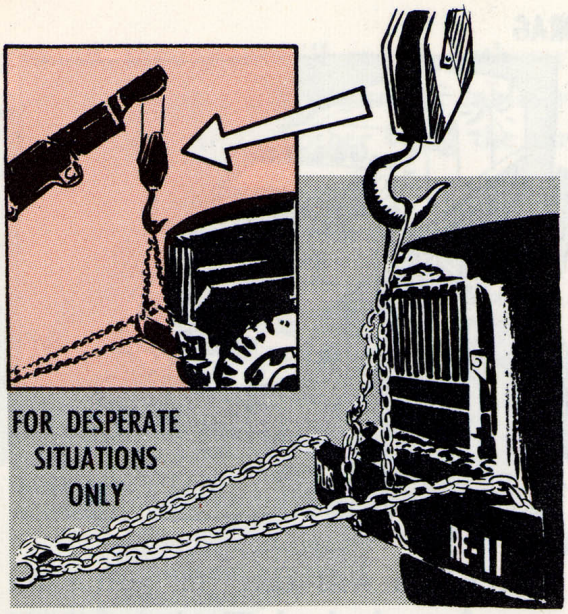


Skid Along—If your load is light, and the road's fair, try this: For a 1/4 or 3/4-ton truck find a strong pole, 6 to 8 feet long, and at least 4 inches in diameter. Lash the pole to the frame with a tow chain or heavy wire, and remove the wheel. Then you shift into front wheel drive and you can move out **s-l-o-w-l-y.** It might be rough getting a start, but once you get moving it'll give you a fair ride for a good piece.

On a 6x6 (single or duals) truck—Raise the bum rear wheel, and lash the axle to the frame with a tow chain or heavy wire (take care your rigging doesn't hurt the brake lines). Remove the wheel and you're on your way.

QUICK HOOK-UP

Here's one you save for desperate situations. It's set-up fast, and it's helpful in an emergency, but it's not as safe as you'd want it under normal conditions (like, with a tow bar).

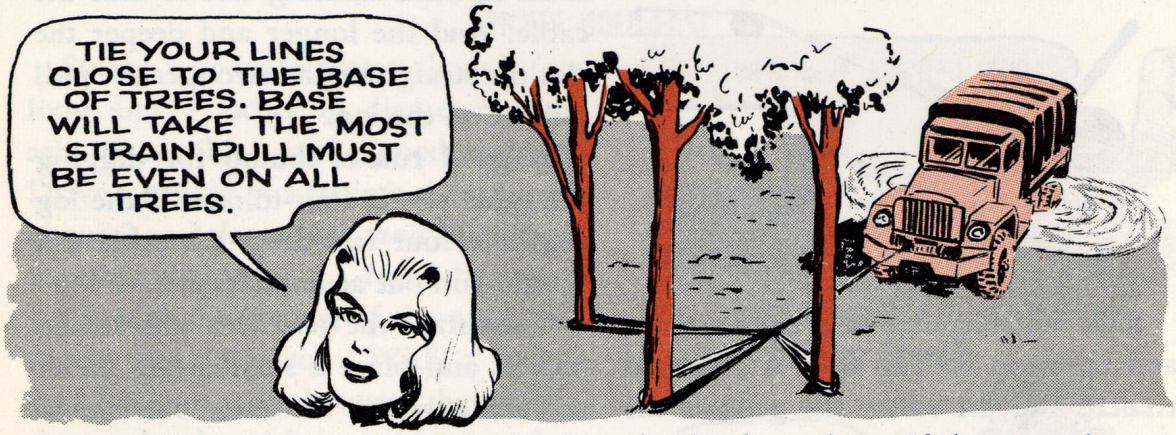


Use two log chains. Put one chain around the bumper of the dead truck, and then through the wrecker's pintle hook. Wrap the other chain around the truck's bumper and then up to the wrecker's hook.

As you lift and crowd the boom you lift the truck's front end, and you can hold it so it won't ram the wrecker as you drive along.

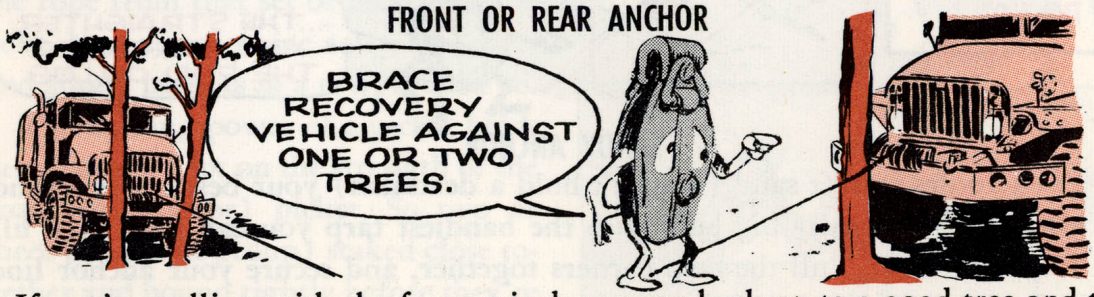
Anytime you have to tow, or be towed, it's best to stop and check the vehicle TM's, for any special towing instructions, before you make your tie-up.

WAYS AND MEANS WITH ANCHORS



Trees, if you're near the right kind, make dandy anchors. If there aren't any healthy, good-sized trees, nearby, you can tie on to two or more smaller ones. But, whichever kind you use always tie your lines close to the base of a tree where it can take the most strain. If you have to use several smaller trees loop your line around them and adjust the line so the pull is even on all the trees.

FRONT OR REAR ANCHOR

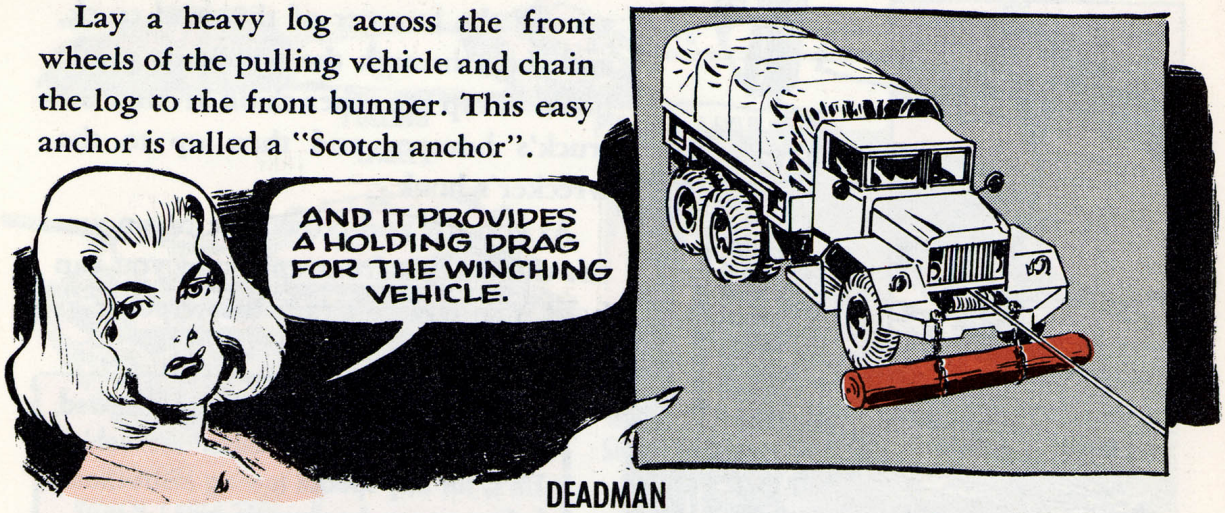


If you're pulling with the front winch you can back up to a good tree and tie the truck's pintle hook to the tree. Or, brace the front, or the rear, of your recovery vehicle against one or two trees for a front, or rear, winching job.

PS MORE

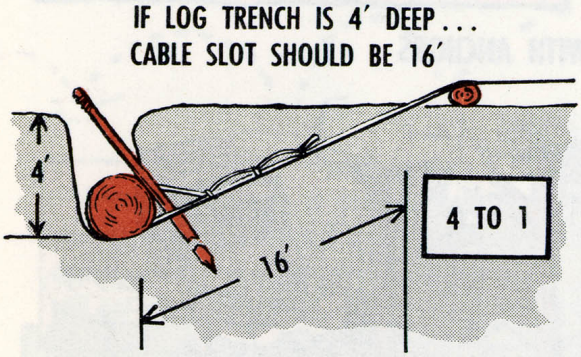
LOG DRAG

Lay a heavy log across the front wheels of the pulling vehicle and chain the log to the front bumper. This easy anchor is called a "Scotch anchor".



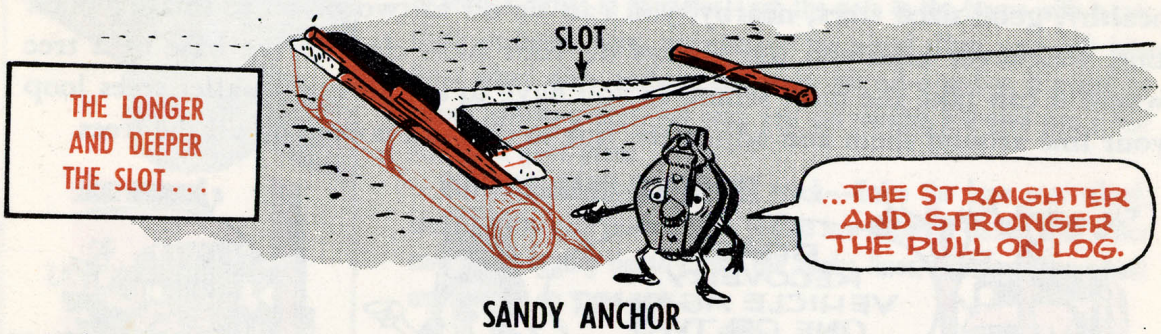
DEADMAN

Sink a strong log in a deep trench, and tie on to it. You need a T-shaped trench, and the softer the ground the deeper the trench should be. Make the wall which will take the pull slant away from the load. The leg of the T is an upward slanting slot to take the cable. And the longer and deeper the slot the straighter and stronger the pull will be on the log.



A good rule-of-thumb for digging the cable slot is four-to-one. If the log trench is four feet deep, the cable slot should run out at least 16 feet.

Then stake the deadman with strong pickets and place a smaller log under the cable where it comes out of the trench.



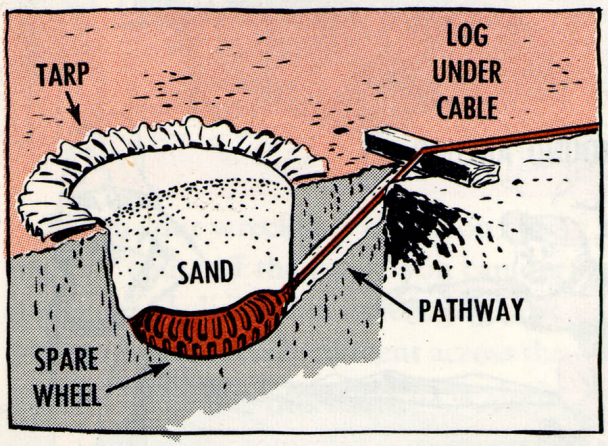
SANDY ANCHOR

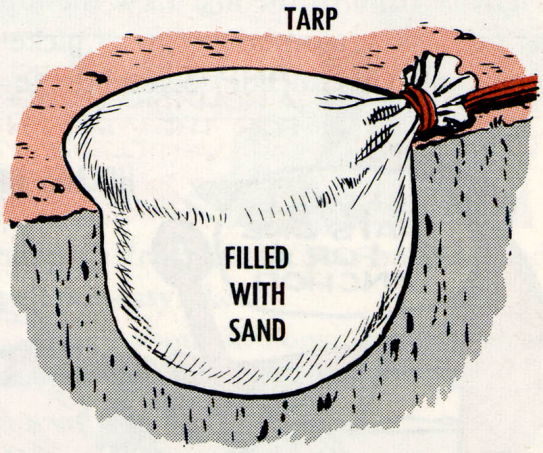
When you're in soft sand (it won't hold a deadman) your best bet is a sand parachute. Line a really big hole with the handiest tarp you can find, then fill the tarp with sand. Pull the tarp corners together, and secure your anchor line to that point.

For a stronger hold, tie the anchor cable to a spare wheel or any other heavy object that's handy and bury it under the parachute. With the cable under-

ground, though, you'll need a pathway for the cable, like with the log deadman, and also a log under the cable where it comes out of the trench. With this set-up you needn't bother tying the tarp corners.

FOR SANDY AREAS





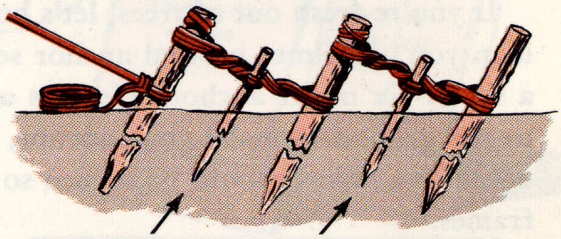
PICKET HOLD-FAST

Strong wooden pickets (about 5 feet long and 3 inches in diameter . . . of ash, if possible) make good anchors. Drive a row of pickets into the ground, about 2 or 3 feet apart, and loop them together with rope . . . from the top of the first to the bottom of the next, and so on down the row. With a strong stick, twist the rope between the pickets, then stake the stick into the ground so the rope'll stay tight.

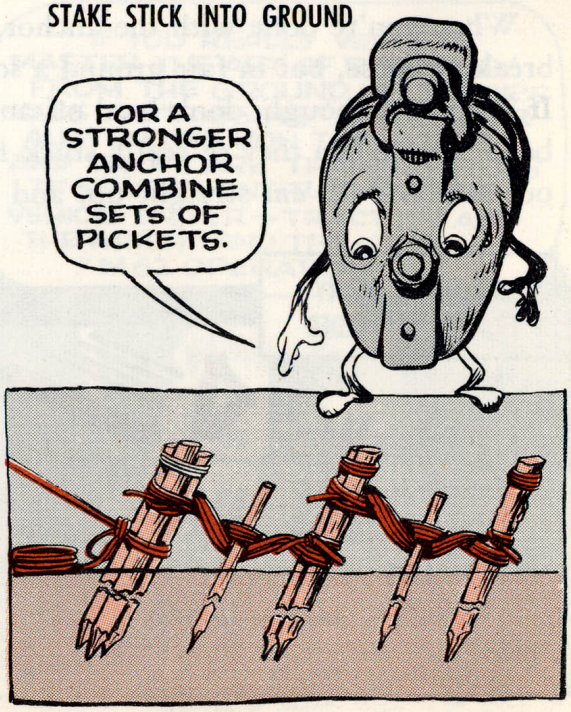
For a stronger anchor, stake two or three pickets **close** together in a tight group, bind them with rope, then loop the rope from that set of pickets to the next. You can combine **sets of pickets** and **single pickets** in a row, if need be.

The holding-power of a picket holdfast depends a lot on the strength of the front (or anchor) picket. So two or three pickets (a group) staked close together and bound tightly before they're roped to the other pickets in your holdfast, are better when you're anchoring for a heavy pull.

TWIST ROPE BETWEEN PICKETS



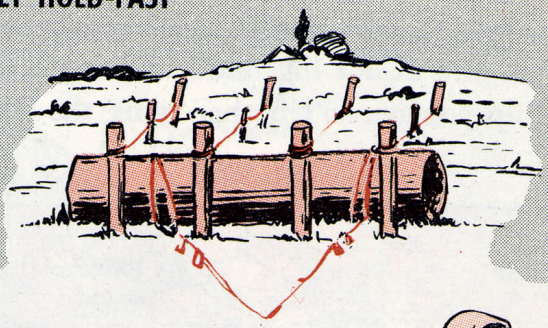
STAKE STICK INTO GROUND



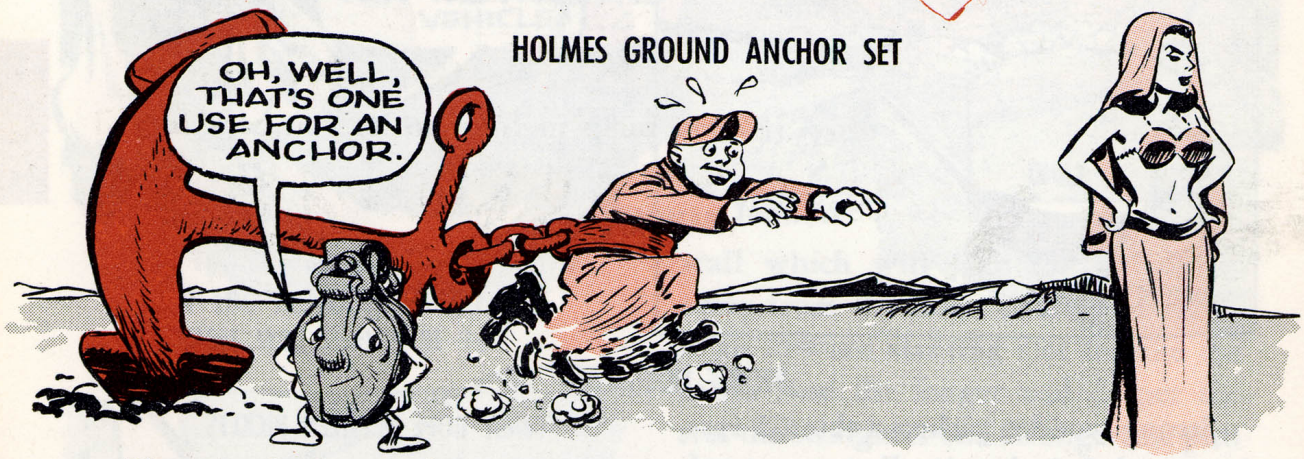
MORE

LOG AND PICKET HOLD-FAST

Tie the anchor cable to a heavy log, and stake four to six strong pickets right in front of the log. Lash the tops of the pickets to another row of pickets (or some other anchor) behind the log.

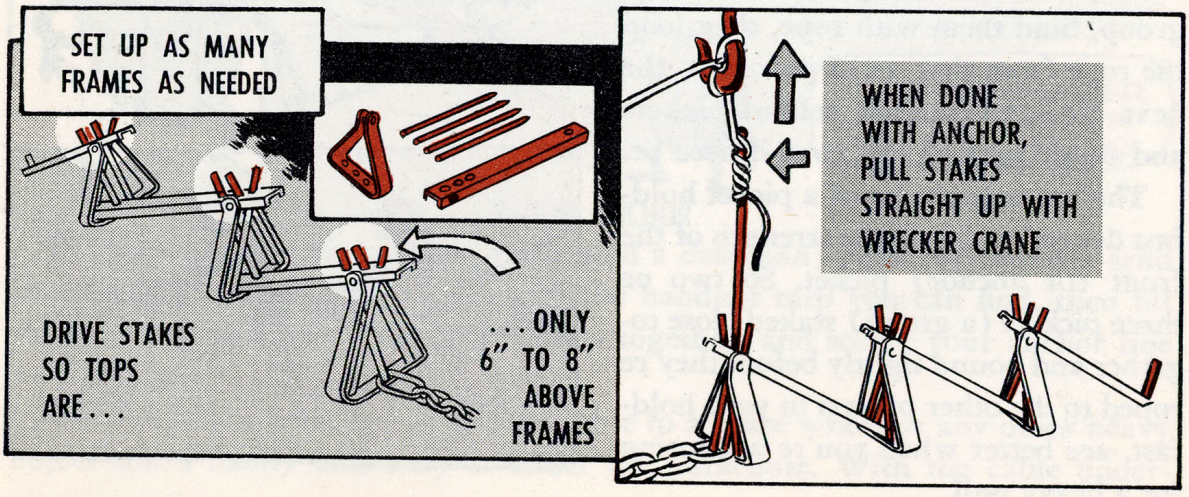


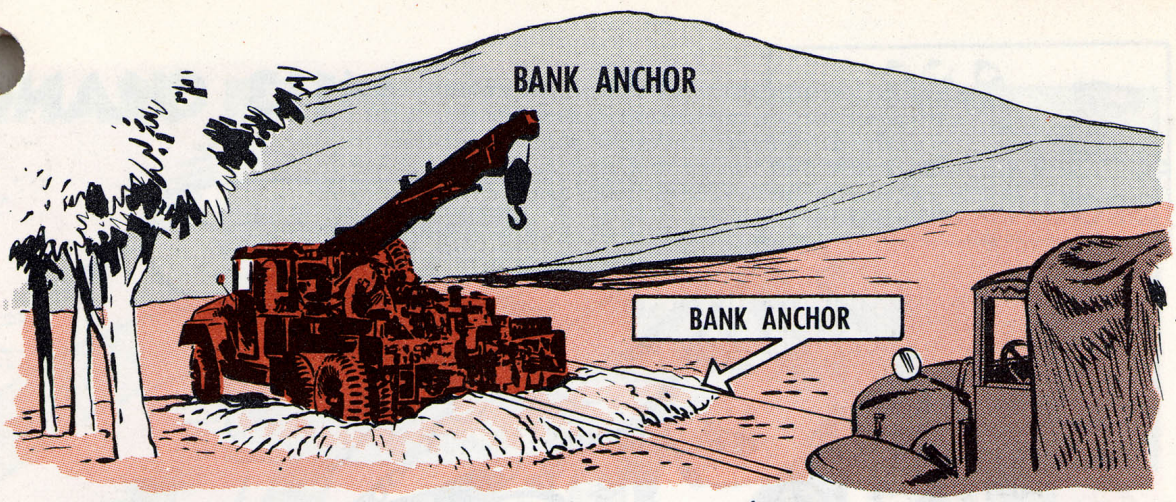
HOLMES GROUND ANCHOR SET



If you're fresh out of trees, let's hope somebody within yelling distance can loan you a Holmes ground anchor set. This ready-made, portable, hold-fast is a set of six metal anchors (frames and stakes). You simply stake the frames to the ground to make your anchor, and you can set up as many frames as you need. The stakes should be driven so their tops are only 6 to 8 inches above the frames.

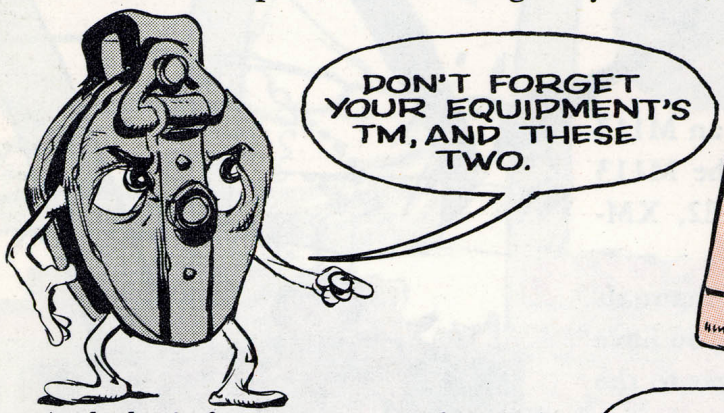
When you're done with the anchor, the stakes may be a bit stubborn about breaking loose, but in fair ground a solid blow at the base should do the trick. If it doesn't, though, don't haul off and hit them sideways at the top . . . that'll bend 'em. When they're really stuck fast use the wrecker's crane to pull them out safely. Pull 'em straight up, and one at a time.

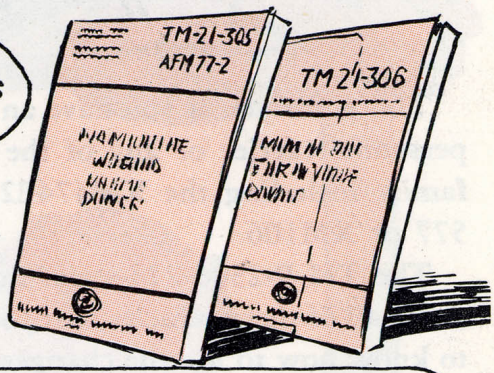




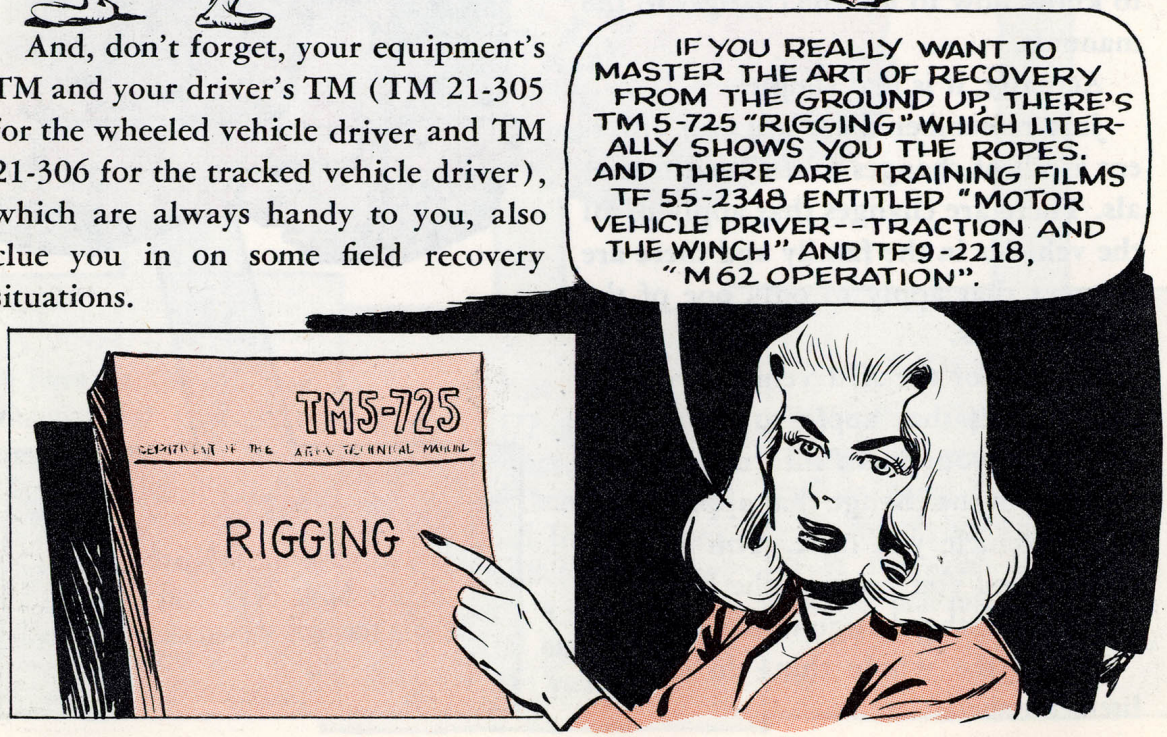
When your wrecker is sitting on hard ground (but, off the road) you can dig in its rear wheels for holding power. Make a straight embankment across the rear to block the pull, and fix a slight ramp in front to let you back in and pull out easy like.

That's about it. Some of these ideas should help you get loose—even by yourself, if you have to.



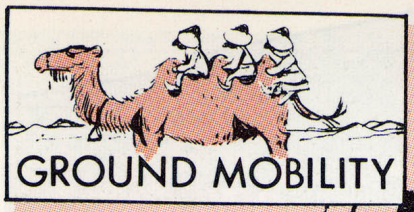


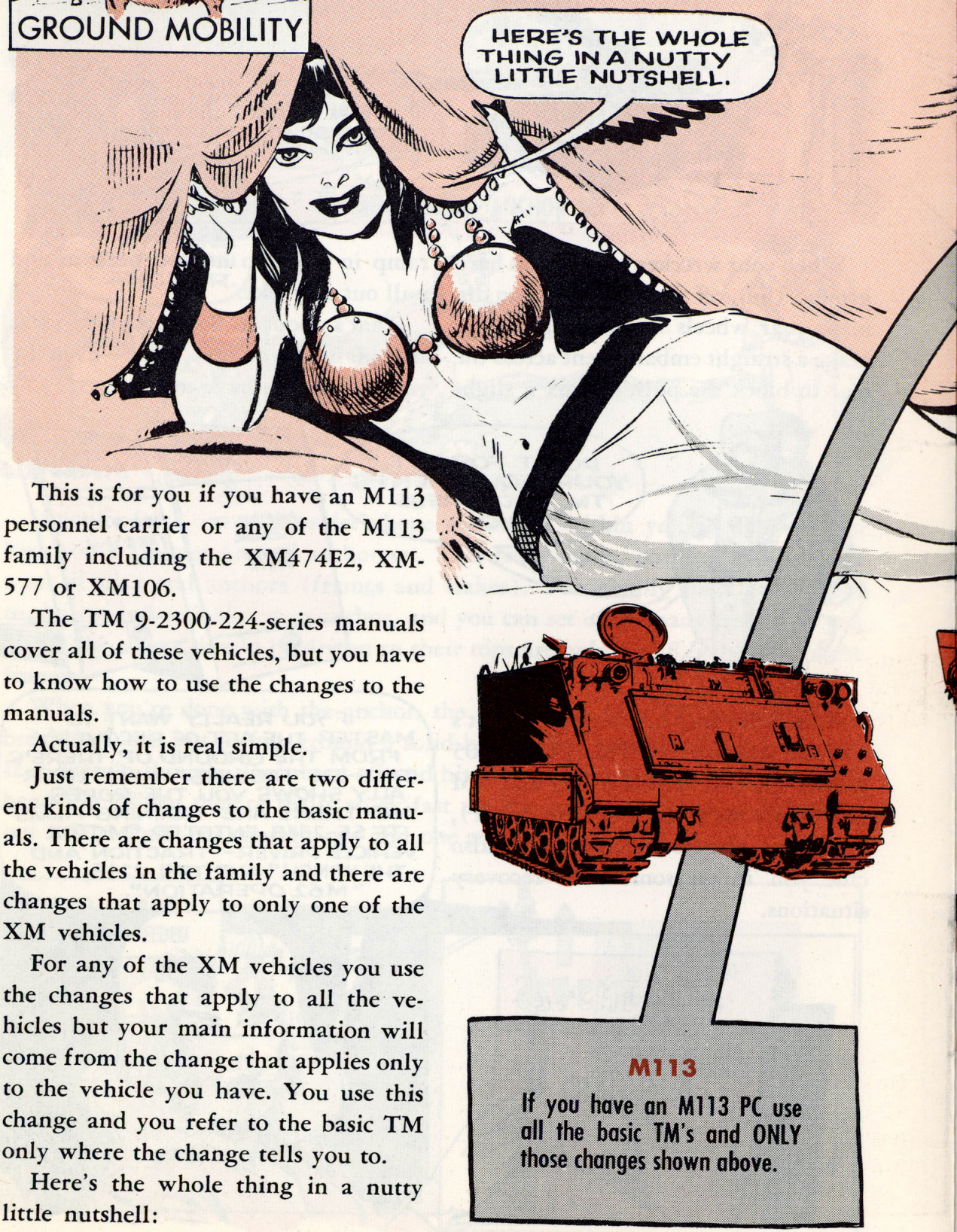
And, don't forget, your equipment's TM and your driver's TM (TM 21-305 for the wheeled vehicle driver and TM 21-306 for the tracked vehicle driver), which are always handy to you, also clue you in on some field recovery situations.



END

M113 CHANGE





This is for you if you have an M113 personnel carrier or any of the M113 family including the XM474E2, XM-577 or XM106.

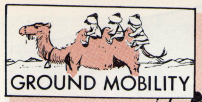
The TM 9-2300-224-series manuals cover all of these vehicles, but you have to know how to use the changes to the manuals.

Actually, it is real simple.

Just remember there are two different kinds of changes to the basic manuals. There are changes that apply to all the vehicles in the family and there are changes that apply to only one of the XM vehicles.

For any of the XM vehicles you use the changes that apply to all the vehicles but your main information will come from the change that applies only to the vehicle you have. You use this change and you refer to the basic TM only where the change tells you to.

Here's the whole thing in a nutty little nutshell:



M113 CHANGE CHART

This is for you if you have an M113 personnel carrier or any of the M113 family including the XM474E2, XM-577 or XM106.

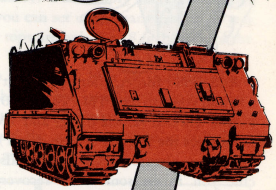
The TM 9-2300-224-series manuals cover all of these vehicles, but you have to know how to use the changes to the manuals.

Actually, it is real simple.

Just remember there are two different kinds of changes to the basic manuals. There are changes that apply to all the vehicles in the family and there are changes that apply to only one of the XM vehicles.

For any of the XM vehicles you use the changes that apply to all the vehicles but your main information will come from the change that applies only to the vehicle you have. You use this change and you refer to the basic TM only where the change tells you to.

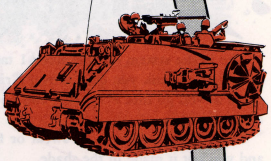
Here's the whole thing in a nutty little nutshell:

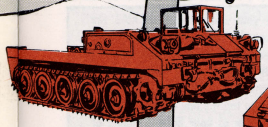


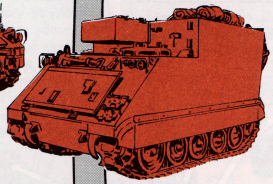
M113

If you have an M113 PC use all the basic TM's and ONLY those changes shown above.

If you have an M113PC or any member of its family you use Changes 1, 3, 5, & 6 to TM 9-2300-224-10; Changes 1, 3, 5, 6, & 8 to TM 9-2300-224-20; and Changes 1 & 3 to TM 9-2300-224-20P, PLUS the changes shown for the individual vehicles in the squares below.







XM474E2

If you have an XM474E2 use the changes but your main guides will be the Change 2's to all the TM's listed above. The Change 2's apply ONLY to this vehicle. Read the Change 2 and refer to the basic manual only where the Change 2 tells you to.

XM577

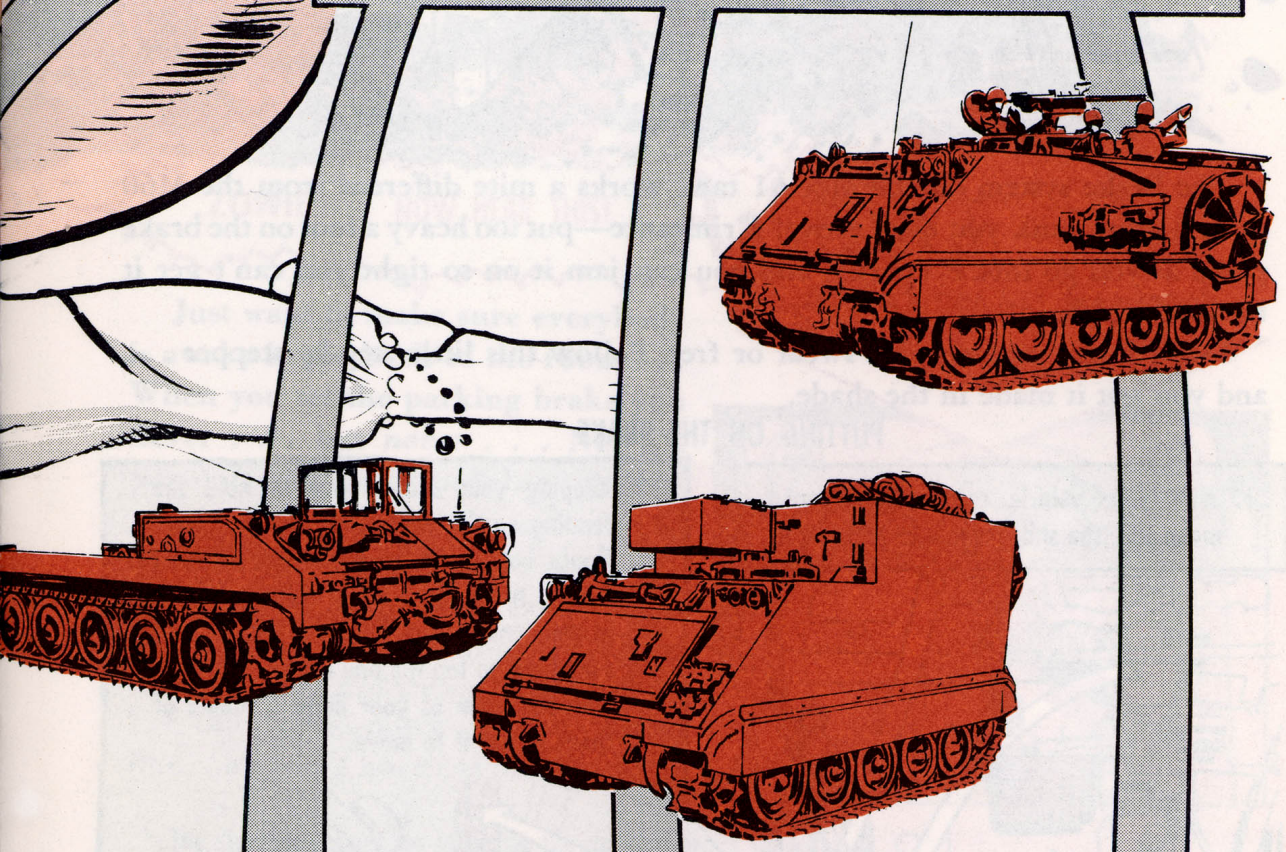
For the XM577 all the changes apply but your main guides will be the Change 4's to all the TM's listed. They were written ONLY for this vehicle. Read your Change 4 and refer to the basic TM only where the Change 4 tells you to.

XM106

With the XM106 use the changes but your main guides will be Change 7 to the -10 and -20 manuals listed and Change 5 to the -20P. Read these changes and refer to the basic TM's only where they tell you to.

CHART

If you have an M113PC or any member of its family you use Changes 1, 3, 5, & 6 to TM 9-2300-224-10; Changes 1, 3, 5, 6, & 8 to TM 9-2300-224-20; and Changes 1 & 3 to TM 9-2300-224-20P, PLUS the changes shown for the individual vehicles in the squares below.



XM474E2

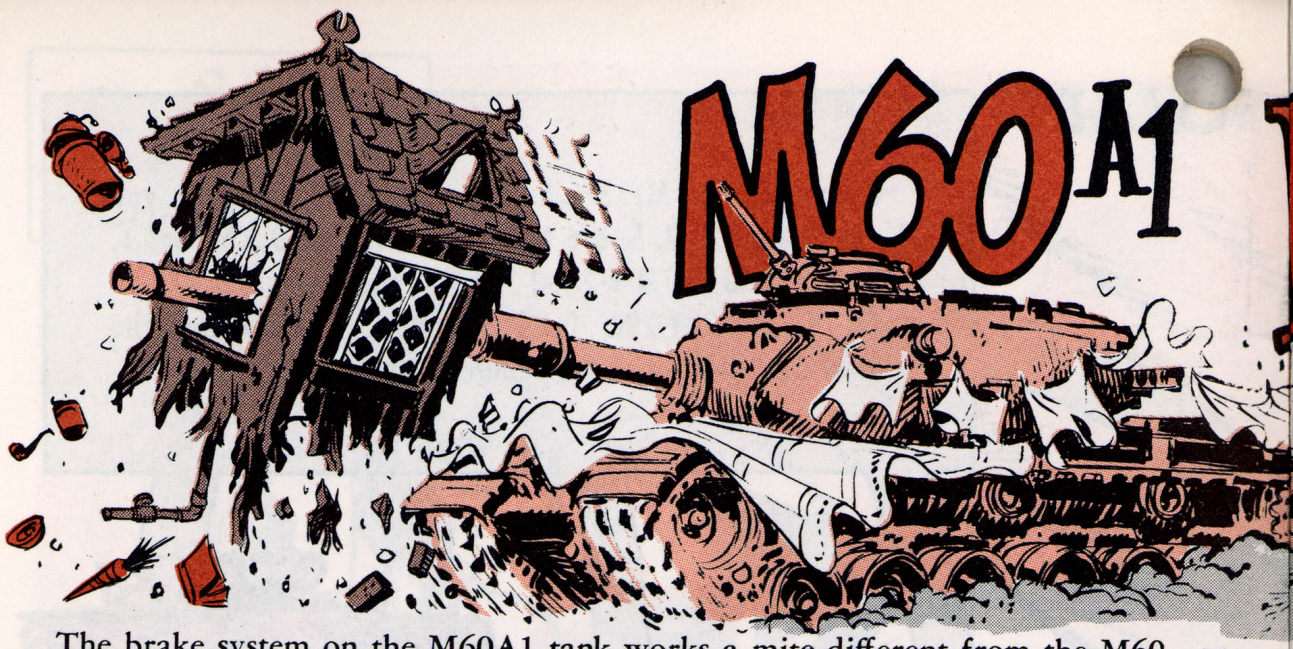
If you have an XM474E2 use the changes but your main guides will be the Change 2's to all the TM's listed above. The Change 2's apply ONLY to this vehicle. Read the Change 2 and refer to the basic manual only where the Change 2 tells you to.

XM577

For the XM577 all the changes apply but your main guides will be the Change 4's to all the TM's listed. They were written ONLY for this vehicle. Read your Change 4 and refer to the basic TM only where the Change 4 tells you to.

XM106

With the XM106 use the changes but your main guides will be Change 7 to the -10 and -20 manuals listed and Change 5 to the -20P. Read these changes and refer to the basic TM's only where they tell you to.

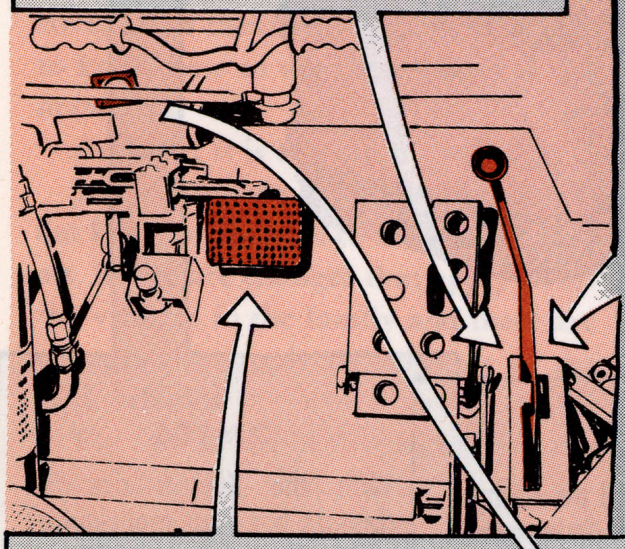


The brake system on the M60A1 tank works a mite different from the M60 or any other tank you ever drove. F'rinstance—put too heavy a foot on the brake pedal as you go into P (park), and you can jam it on so tight you can't get it back off again.

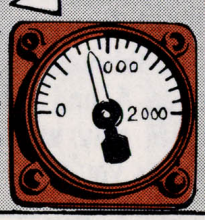
Don't hurry or worry or sweat or fret. Follow this little step-by-stepper . . . and you got it made in the shade.

PUTTING ON THE BRAKE

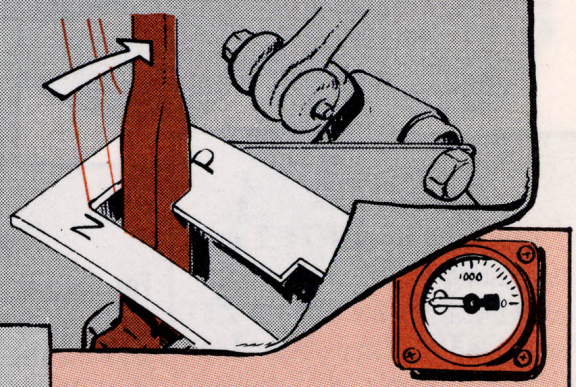
1. With your vehicle completely stopped, make sure the shift lever is in N (neutral).



2. Now push on the service brake pedal till you get a reading on the brake line pressure gage of between 750 and 900 PSI . . . that's what this gage to the left of the pedal is for, to let you know when you're pressing your foot down hard enough.

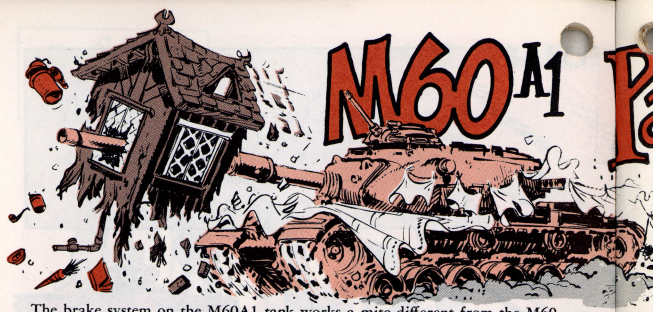


3. Keeping your foot steady to hold the reading on the gage, push the shift lever firmly but gently from N (neutral) to P (park). If there's a lot of dust and gook in the transmission shift lever housing you may have to tap the ball of the shift lever with the palm of your hand a couple of times to get it to move.



4. When you get the shift lever into P (park) take your foot off the brake. The gage will now go back to zero but the parking brake will be locked.

M60A1 Parking Poop

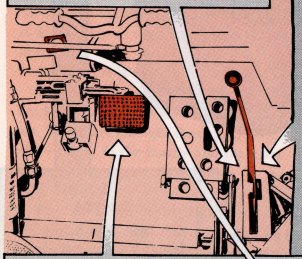


The brake system on the M60A1 tank works a mite different from the M60 — or any other tank you ever drove. F'rinstance—put too heavy a foot on the brake pedal as you go into P (park), and you can jam it on so tight you can't get it back off again.

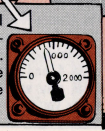
Don't hurry or worry or sweat or fret. Follow this little step-by-stepper . . . and you got it made in the shade.

PUTTING ON THE BRAKE

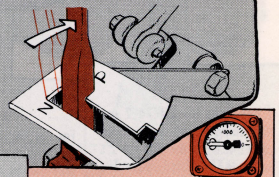
1. With your vehicle completely stopped, make sure the shift lever is in N (neutral).



2. Now push on the service brake pedal till you get a reading on the brake line pressure gage of between 750 and 900 PSI . . . that's what this gage to the left of the pedal is for, to let you know when you're pressing your foot down hard enough.



3. Keeping your foot steady to hold the reading on the gage, push the shift lever firmly but gently from N (neutral) to P (park). If there's a lot of dust and gook in the transmission shift lever housing you may have to tap the ball of the shift lever with the palm of your hand a couple of times to get it to move.



4. When you get the shift lever into P (park) take your foot off the brake. The gage will now go back to zero but the parking brake will be locked.

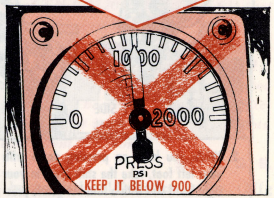
ZOWIE! NOW HEAR THIS!

Achtung

ATTENTION ALL HANDS!

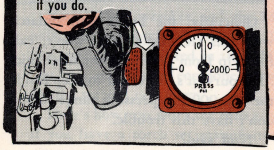
WATCH IT!

Just want to make sure everybody is awake in the back of the room . . . When you set the parking brake you never . . . but *never* . . . NEVER push on your brake pedal so the gage goes over 900 PSI, on account of this can lock the brake so hard you can't get it unlocked. 'Course this won't apply for ordinary braking when you *are not* trying to P (park). For that, press down as hard as you like, you can't hurt anything.



The step-by-stepper for releasing the parking brake is like so . . .

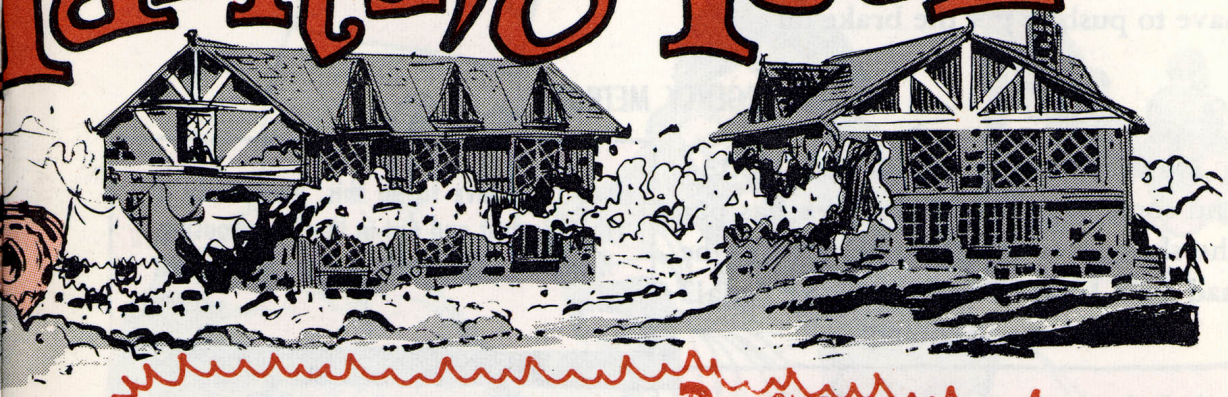
1. Push in on the brake pedal until the pressure gage registers about 1000 PSI. Do this with a steady pressure. Don't pump the pedal because it won't work so good if you do.



2. Holding the pressure at 1000 PSI, move the shift lever from P (park) into N (neutral). This shouldn't take any muscle. If it won't come, try pressing down harder with your foot but don't force the shift lever. If you got a lotta dust and gook in the shift lever housing you may have to tap the shift lever with the palm of your hand a couple times to make it move.

MORE

Parking Poop



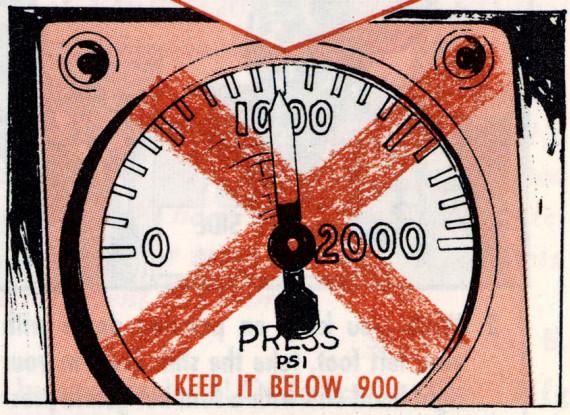
ZOWIE! NOW HEAR THIS!

Achtung

ATTENTION ALL HANDS!

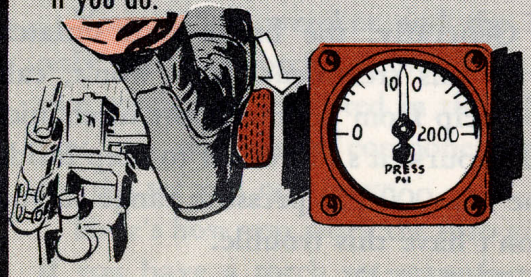
WATCH IT!

Just want to make sure everybody is awake in the back of the room . . . When you set the parking brake you never . . . but *never* . . . NEVER push on your brake pedal so the gage goes over 900 PSI, on account of this can lock the brake so hard you can't get it unlocked. 'Course this won't apply for ordinary braking when you *are not* trying to P (park). For that, press down as hard as you like, you can't hurt anything.



The step-by-stepper for releasing the parking brake is like so . . .

1. Push in on the brake pedal until the pressure gage registers about 1000 PSI. Do this with a steady pressure. Don't pump the pedal because it won't work so good if you do.



2. Holding the pressure at 1000 PSI, move the shift lever from P (park) into N (neutral). This shouldn't take any muscle. If it won't come, try pressing down harder with your foot but don't force the shift lever. If you got a lotta dust and gook in the shift lever housing you may have to tap the shift lever with the palm of your hand a couple times to make it move.

P.S. MORE

The reason you don't pump the brake pedal when you want to release it is because, on a hydraulic system like this, the more you pump the harder you'll have to push to get the brake off.

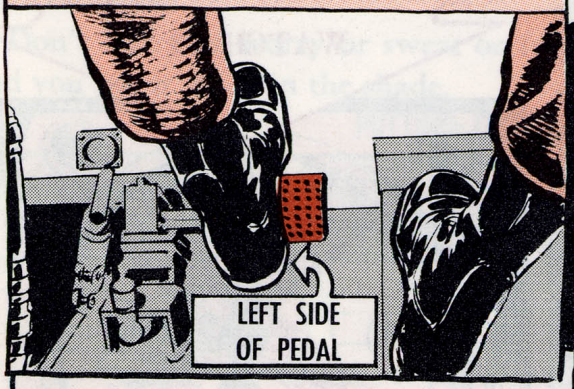
If you **have** pumped on it, just knock off and take a break for a minute or two to let the master cylinder drift back into the unapplied position.

EMERGENCY METHODS

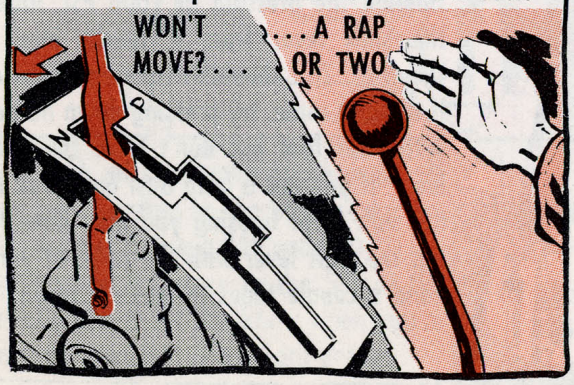
Now supposing you get an M60A1 and some muscle-bound clown has put the shift lever into P (park) while he had over 1000 PSI on the brake pedal?

This is what you can try . . .

1. Push in on the brake pedal with all your might, pressing your left foot on the left side of the pedal.

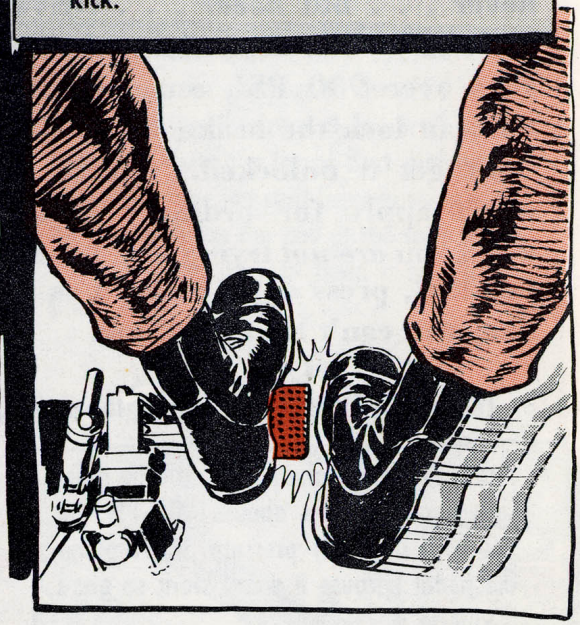


2. While you keep on pressing down with your left foot, take the shift lever in your right hand and with a firm but gentle pressure try to move it from P (park) to N (neutral). If this won't do it, rapping the shift lever with the palm of your right hand a couple of times may move it over.



You may have to do this, particularly if there is dust and dirt in the lever housing. If none of this works, go on to the next step.

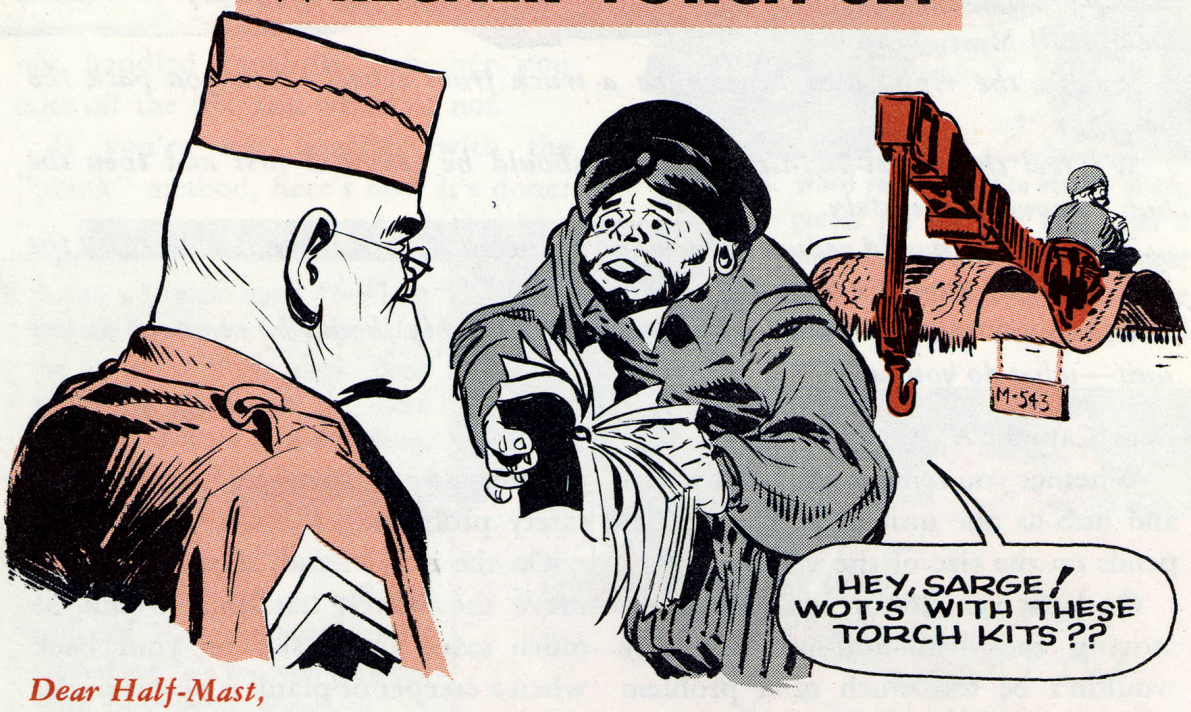
3. Keep on pressing down with your left foot and try to move the lever with your right hand. At the same time take your right foot and give the foot brake a gentle kick. If this won't jar it loose, give it a harder kick.



Generally, the brake will unlatch with this treatment. If it won't, call for help from your support mechanics . . . 'course it's lots easier to keep inside the 750-900 PSI pressure range so you don't have this trouble.

'Nuff said?

WRECKER TORCH SET



Dear Half-Mast,

Hooray! We just received our new copy of TM 9-2320-211-10 (Mar 63) that covers the operation and OEM of our 5-ton M543 wrecker.

There's only one snag that cropped up with the new TM. It's the Welder's Tool Kit and the Cutting and Welding Torch Set listed on pages 114 and 115.

The previous OEM list in Change No. 1 to TB 9-2320-211-12/1 authorized a Welder's Tool Kit and Torch Set for an M543. The new TM only authorizes these items for the M62 wrecker. And besides that it gives the M62 two sets.

Doesn't our M543 wrecker rate this equipment any more?

SFC M. G. B.

Dear Sergeant M. G. B.,

Keep your Welder's Tool Kit and Torch Set. The M543 rates this equipment as part of its OEM. The TM intended to give you the same welding equipment as listed in the superseded TB.

Your M543 wrecker and the M62 only rate one torch set, not two. The two torch sets are listed in the TM so you can requisition component parts for the set you now have.

Here's how you work the info given; if you have a torch set manufactured by the National Cylinder Gas Co., (Mfg No. 14), then you get your replacement parts by using the FSN's listed under the first set. The torch set that lists thirteen (13) components.

If you have a set manufactured by the Victor Equipment Co., (Mfg No. WC82), then you use the FSN's listed under the second set. The set that lists FSN's for eleven (11) components.

The correct FSN for both Torch Sets is FSN 3433-294-6743; just like the TB had it.

Half-Mast

SLIDE, KELLY,

Dear Half-Mast,

What's the right way to remove a truck front wheel when you pack the bearing?

We feel the wheel-and-tire assembly should be removed first and then the hub removed separately.

This method would reduce the weight of the entire assembly and decrease the possibility of damaging the inner-hub seal.

Others say that the entire wheel-and-hub assembly should be removed as one unit—what do you say?

Capt A. P. N.

Dear Captain A. P. N.,

Whether you remove the front wheel and hub as one unit or separately depends on the size of the vehicle.

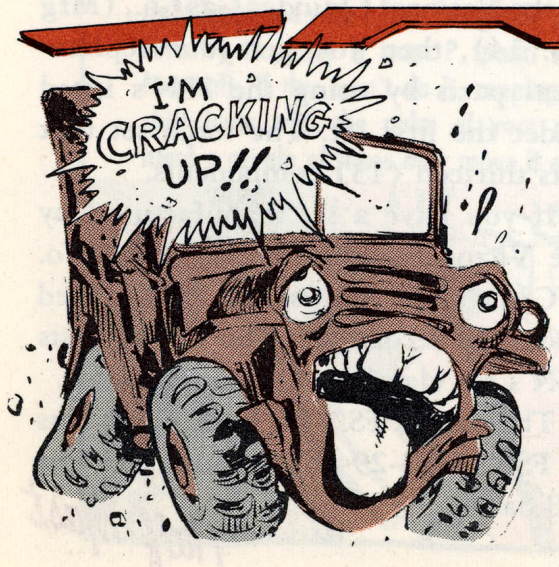
On light vehicles up to 2½-ton, removing the drum-and-hub assembly wouldn't be too much of a problem after you remove the wheel. This assembly doesn't weigh too much and can be handled without any great sweat.

With heavy trucks (5-ton and up), it's another story. If you take off the wheel first, you'd still have a tough job removing the hub and drum because of its size and weight. It weighs over 150 pounds and would pose a handling and safety problem.

On the other hand, if you don't remove the wheel, handling would be much safer and easier on your back when a creeper or plank is placed under the tire . . . and the complete assembly slid off as one unit.

Many mechanics remove the tire and wheel before they pull the hub. When they can't do that, they use the creeper or plank method.

You have some danger of seal or thread damage if the assemblies are



BODY

Your body cracking? M151 ¼-ton body, that is?

Usually the cracks show up below the rear blackout marker and where the fenders join up near the hood.

To head 'em off at the pass and stop them from spreading, you welders have to ride herd with your arc welders in the No. 2 Supplemental Tool Kit. Better yet, if you happen to be near a support outfit with a heli-arc unit, the crack can be brazed up

SLIDE, KELLY,

Dear Half-Mast,

What's the right way to remove a truck front wheel when you pack the bearing?

We feel the wheel-and-tire assembly should be removed first and then the hub removed separately.

This method would reduce the weight of the entire assembly and decrease the possibility of damaging the inner-hub seal.

Others say that the entire wheel-and-hub assembly should be removed as one unit—what do you say?

Capt A. P. N.

Dear Captain A. P. N.,

Whether you remove the front wheel and hub as one unit or separately depends on the size of the vehicle.

On light vehicles up to 2½-ton, removing the drum-and-hub assembly wouldn't be too much of a problem after you remove the wheel. This assembly doesn't weigh too much and can be handled without any great sweat.

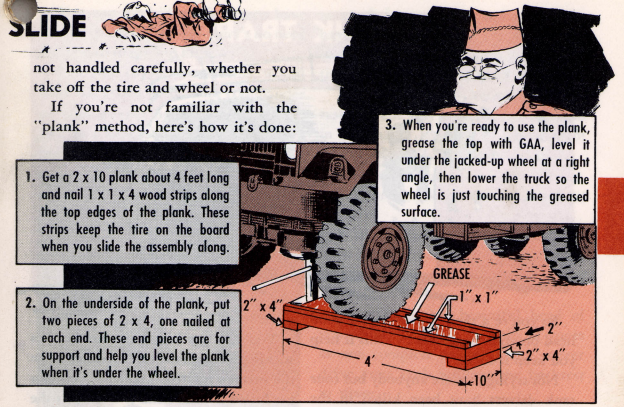
With heavy trucks (5-ton and up), it's another story. If you take off the wheel first, you'd still have a tough job removing the hub and drum because of its size and weight. It weighs over 150 pounds and would pose a handling and safety problem.

On the other hand, if you don't remove the wheel, handling would be much safer and easier on your back when a creeper or plank is placed under the tire . . . and the complete assembly slid off as one unit.

Many mechanics remove the tire and wheel before they pull the hub. When they can't do that, they use the creeper or plank method.

You have some danger of seal or thread damage if the assemblies are not handled carefully, whether you take off the tire and wheel or not.

If you're not familiar with the "plank" method, here's how it's done:

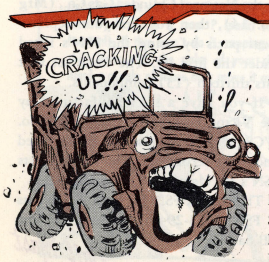


Now all you have to do is remove the hub drive flange, adjusting lock and nuts. Then pull the wheel, hub and drum assemblies straight out off the axle, sliding the bulky load along the greased plank. This method has saved many seals and prevented axle threads from being damaged.

Last, wipe off the grease from the tire.

Half-Mast

BODY



Your body cracking? M151 ¼-ton body, that is?

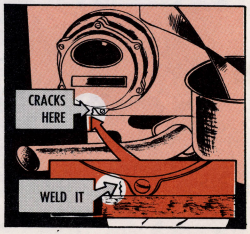
Usually the cracks show up below the rear blackout marker and where the fenders join up near the hood.

To head 'em off at the pass and stop them from spreading, you welders have to ride herd with your arc welders in the No. 2 Supplemental Tool Kit. Better yet, if you happen to be near a support outfit with a heli-arc unit, the crack can be brazed up with a brass rod as the feeder.

You have to be careful not to use any flame welding; it warps the metal. Your M151 has a thin, lightweight, strong, stress skin construction that won't take kindly to a hot flame being put directly onto it.

Once the cracks are welded up, bead smoothed off, the area primed and repainted, take one more cotton-pickin' minute to send off a DA Form 2407 (EIR), pronto.

CRACKING?



SLIDE

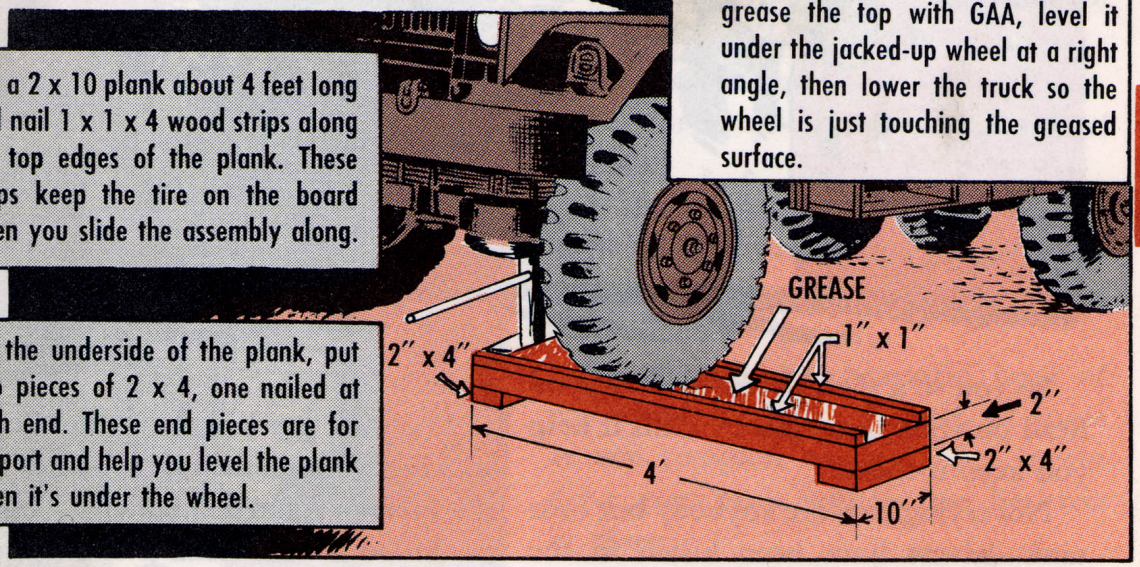
not handled carefully, whether you take off the tire and wheel or not.

If you're not familiar with the "plank" method, here's how it's done:

1. Get a 2 x 10 plank about 4 feet long and nail 1 x 1 x 4 wood strips along the top edges of the plank. These strips keep the tire on the board when you slide the assembly along.

2. On the underside of the plank, put two pieces of 2 x 4, one nailed at each end. These end pieces are for support and help you level the plank when it's under the wheel.

3. When you're ready to use the plank, grease the top with GAA, level it under the jacked-up wheel at a right angle, then lower the truck so the wheel is just touching the greased surface.



Now all you have to do is remove the hub drive flange, adjusting lock and nuts. Then pull the wheel, hub and drum assemblies straight out off the axle, sliding the bulky load along the greased plank. This method has saved many seals and prevented axle threads from being damaged.

Last, wipe off the grease from the tire.

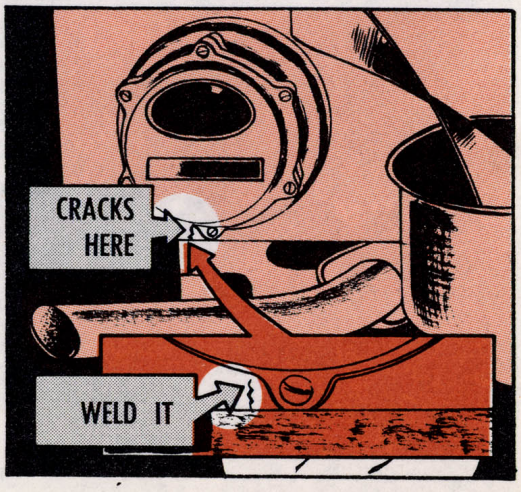
Half-Mast

CRACKING?

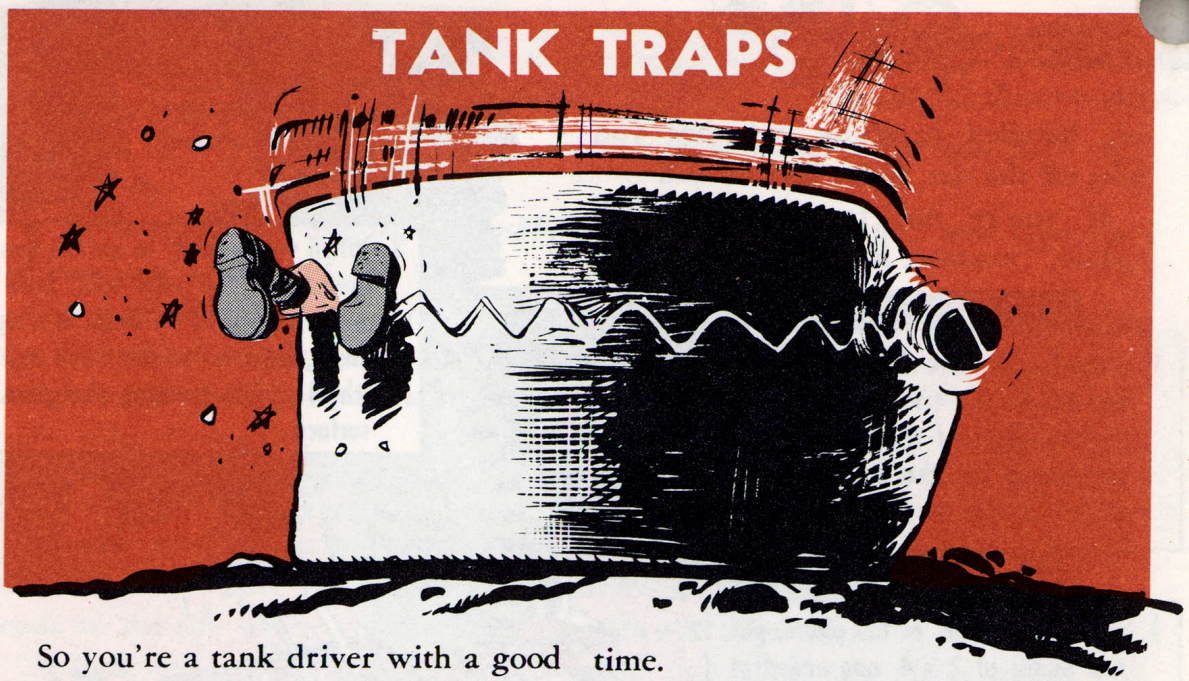
with a brass rod as the feeder.

You have to be careful not to use any flame welding; it warps the metal. Your M151 has a thin, lightweight, strong, stress skin construction that won't take kindly to a hot flame being put directly onto it.

Once the cracks are welded up, bead smoothed off, the area primed and re-painted, take one more cotton-pickin' minute to send off a DA Form 2407 (EIR), pronto.



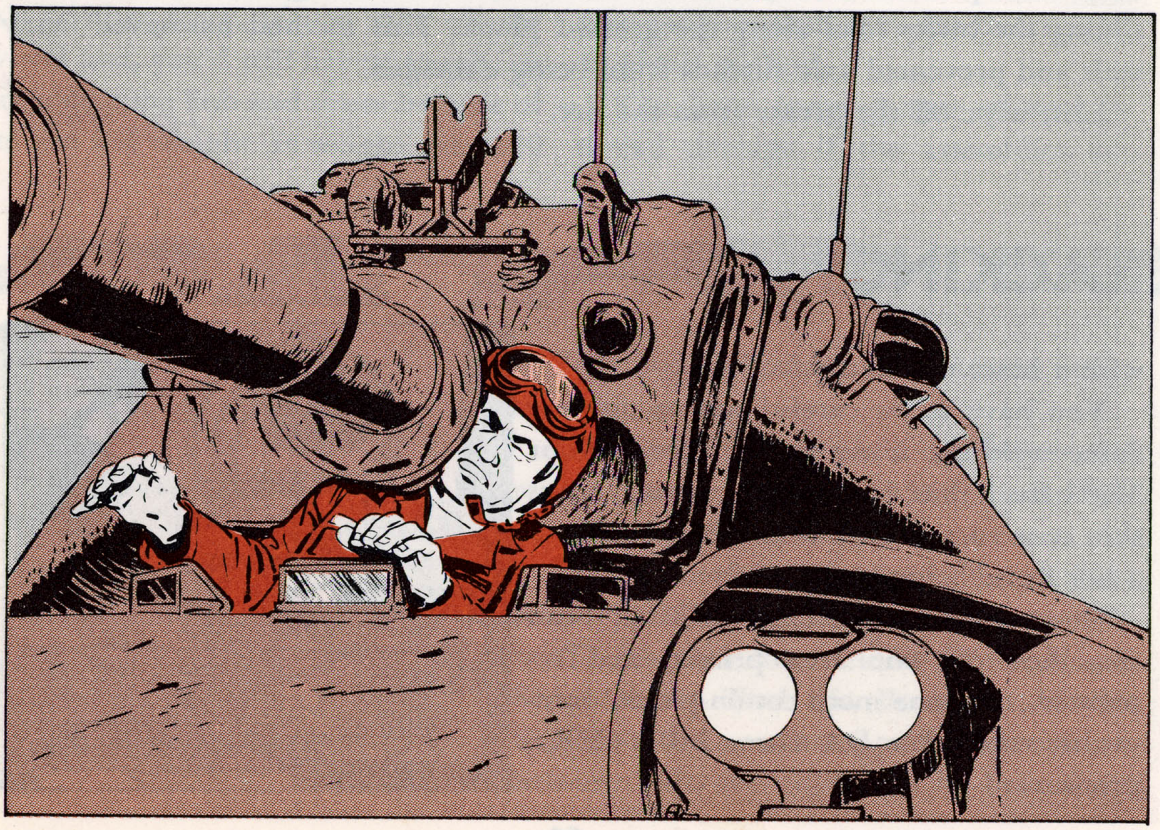
TANK TRAPS



So you're a tank driver with a good head on your shoulders . . . this'll help you keep it there.

Not trying to scare anybody but four tank drivers have been killed in the last 2 or 3 years because they had their heads in the wrong place at the right time.

You **can** get killed if your head is sticking through the turret basket when the turret's rotated. Likewise, you **can** get killed if your head is stuck out the driver's hatch when the gun is traversed.



You can get killed—four men have already proved that—so there's no need for you to make the fifth.

Not one of these accidents would have happened if the tank commander or tank gunner had given warning—like he's supposed to—before moving the turret or the gun.

Work up your own system of signals. You tank commanders and tank gunners should make this a habit like breathing—it may let your tank driver keep on breathing.

But you tank drivers . . . nobody has as much interest in your head as you have. Nobody else will (or should) go to so much trouble to keep it from getting it disassembled off your shoulders.

Every tank driver knows the backrest is in the way when he has to climb in and out of his seat, so lots of them take it off and leave it off.

This is a mistake.

For three tank drivers it was a fatal mistake!

With the backrest off you can lean back into the turret far enough to get chopped in two if somebody moves the turret.

So to keep that beautiful head of yours and that beautiful body of yours as one complete assembly . . . never drive your tank without the backrest in place.

Take it off when you leave the tank and don't put it back until you're seated, because that's handy, but don't drive without it. With the backrest in place you'll be all right no matter what wild swoops the turret takes.

Likewise, never pop your head up through your hatch unless you know it's all right to do so.

KNOW BEFORE YOU HAUL

Anybody toting fuel in a tank-truck or tank-semitrailer without knowing all the job details sure must have rocks in his head.

Of course, you wouldn't operate your M49, M49C, M217, M217C tank-truck or M131-series tank-semitrailer until you got real friendly with all the details in the Petroleum Tank-Vehicle TM. It's TM 10-1113 (Sep 59) and its Change 1 (May 63). The change gives a lot of new dope.

This TM is not just a "nice-to-have" pub . . . it's a "got-to-have" for every fuel transporter. If distribution missed your outfit, send in your order (DA Form 17) for a copy right now.

Here's the current list of URGENT MWO. They are the only ones classified urgent according to DA Msg. 954247 dated 4 Feb 64. Just forget those previous listings you've seen in PS.

URGENT MWO'S

TM 1-1H-37-1007, 5 May 61; C1, 14 Aug 61; C2, 29 May 62.
TM 1-1H-37A-1031, 22 Jan 59; C2, 13 Jul 59.
TM 1-1H-37A-1034, 15 Dec 59; C1, 28 Apr 60.
TM 1-1L-19-1005, 16 Jul 58; C1, Jun 59.
TM 1-1L-19(T)D-1002, 12 Jun 59; C1, 23 Dec 59.

MWO 3-1040-206-45/3, 18 Sep 62.
MWO 5-4610-202-35/1, 8 Sep 61.
MWO 8-6525-200-20/1, 10 Jun 59.
MWO 8-6525-201-20/1, 1 Oct 59.
MWO MED 16, 25 Sep 58; C1, 16 Feb 59.
MWO 9-1100-250-30/1, 18 Sep 63.
MWO 9-1410-302-30/6, 30 Jul 63.
MWO 9-1410-400-34/2/1, 6 Mar 62.
MWO 9-1430-254-30/2/4, 20 Jul 62.
MWO 9-1430-267-30/1/6, 25 Jul 63.
MWO 9-1450-500-20/9, 31 Oct 62.
MWO 9-2300-217-30, 14 Nov 61.
MWO 9-2350-215-20/1, 4 May 62.
MWO 9-2350-215-20/10, 20 Aug 62.
MWO 9-2350-215-30/7, 1 Oct 62.
MWO 9-4900-500-30/39, 3 Oct 63.
MWO 9-4910-418-30/1, 28 Jan 63; C1, 12 Jun 63.
MWO 9-4935-251-30/2, 25 Oct 61.
MWO 9-4940-251-30/2/7, 2 Dec 63.
MWO 9-6920-400-34/5, 5 Oct 62.
MWO 9-8115-200-50/1, 9 Aug 60.
MWO ORD J753-1-W15, 11 Sep 61.
MWO 10-1670-213-30/1, 9 Sep 63.
MWO 11-6720-219-45/1, 20 Jul 62.
MWO 11-6720-220-13/1, 24 Jul 62.
MWO 55-1510-204-20/2, 1 Jun 61; C1, 27 Jun 61.
MWO 55-1510-204-20/5, 19 Jul 61.
MWO 55-1510-204-34/9, 12 May 61.
MWO 55-1510-204-34/31, 21 Nov 61.
MWO 55-1510-204-34/41, 27 Apr 62.
MWO 55-1510-204-34/43, 27 Apr 62.
MWO 55-1510-204-34/44, 4 May 62; C1, 12 Apr 63.
MWO 55-1510-206-34/2, 27 Sep 61.
MWO 55-1510-206-34/3, 8 May 62.
MWO 55-1520-207-20/33, 20 Jul 61; C1, 22 Sep 61.
MWO 55-1520-207-34/34, 5 Aug 61.
MWO 55-1520-207-34/35, 27 Oct 61; C1, 23 Apr 62.
MWO 55-1520-207-34/52, 29 May 62.
MWO 55-1520-208-34/19, 29 May 62.
MWO 55-1520-208-34/21, 5 Sep 62.
MWO 55-1520-209-34/21, 26 Jun 63.
MWO 55-1520-209-34/38, 23 Sep 63.
MWO 55-1520-211-34/22, 6 Aug 63.
MWO 55-2220-203-30/1, 30 Aug 63.

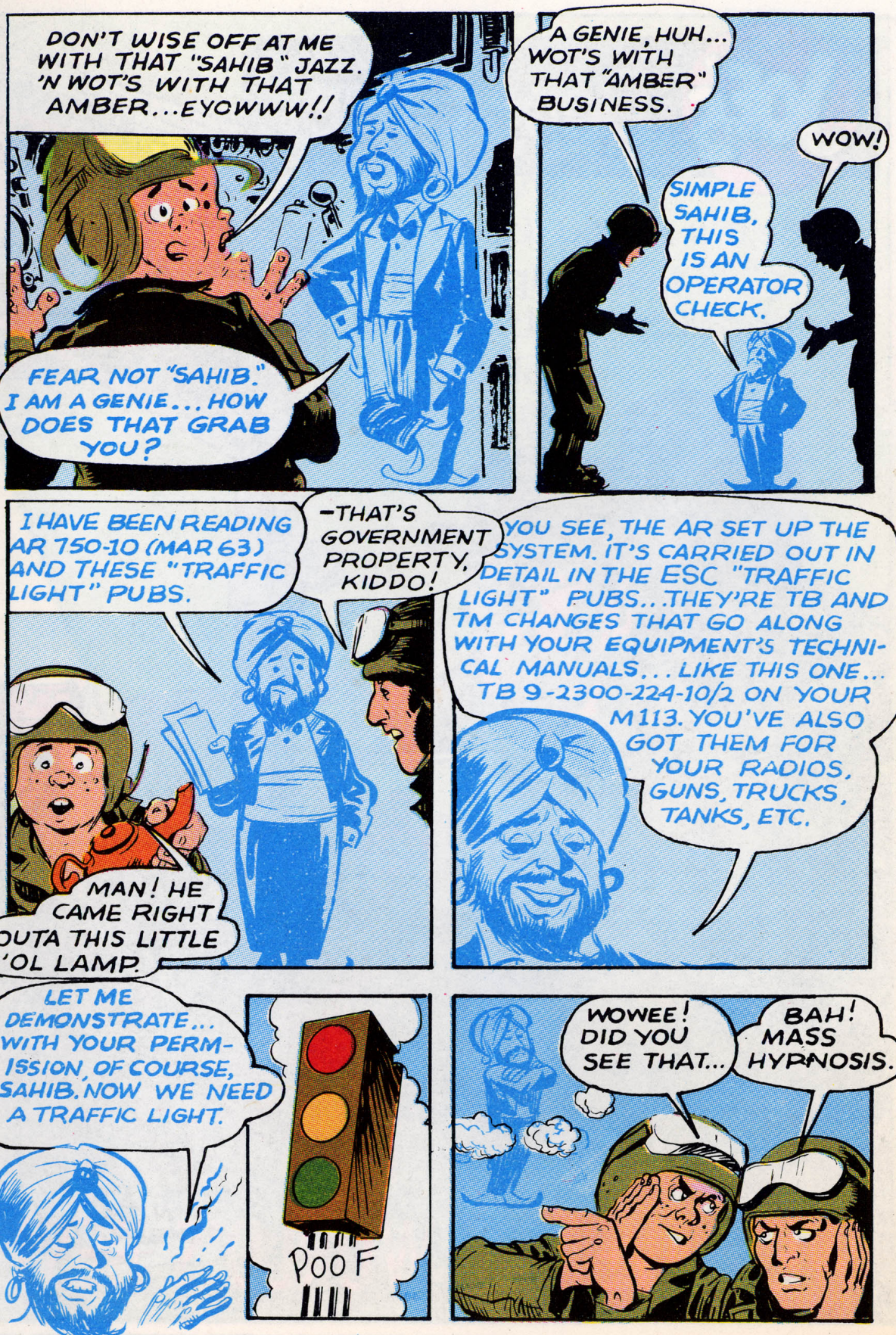
A selected list of recent publications of interest to Organizational Maintenance Personnel. This is a list compiled from recent Adjutant General's Distribution Center Bulletins. For complete details see DA Pam 310-4 with latest changes.

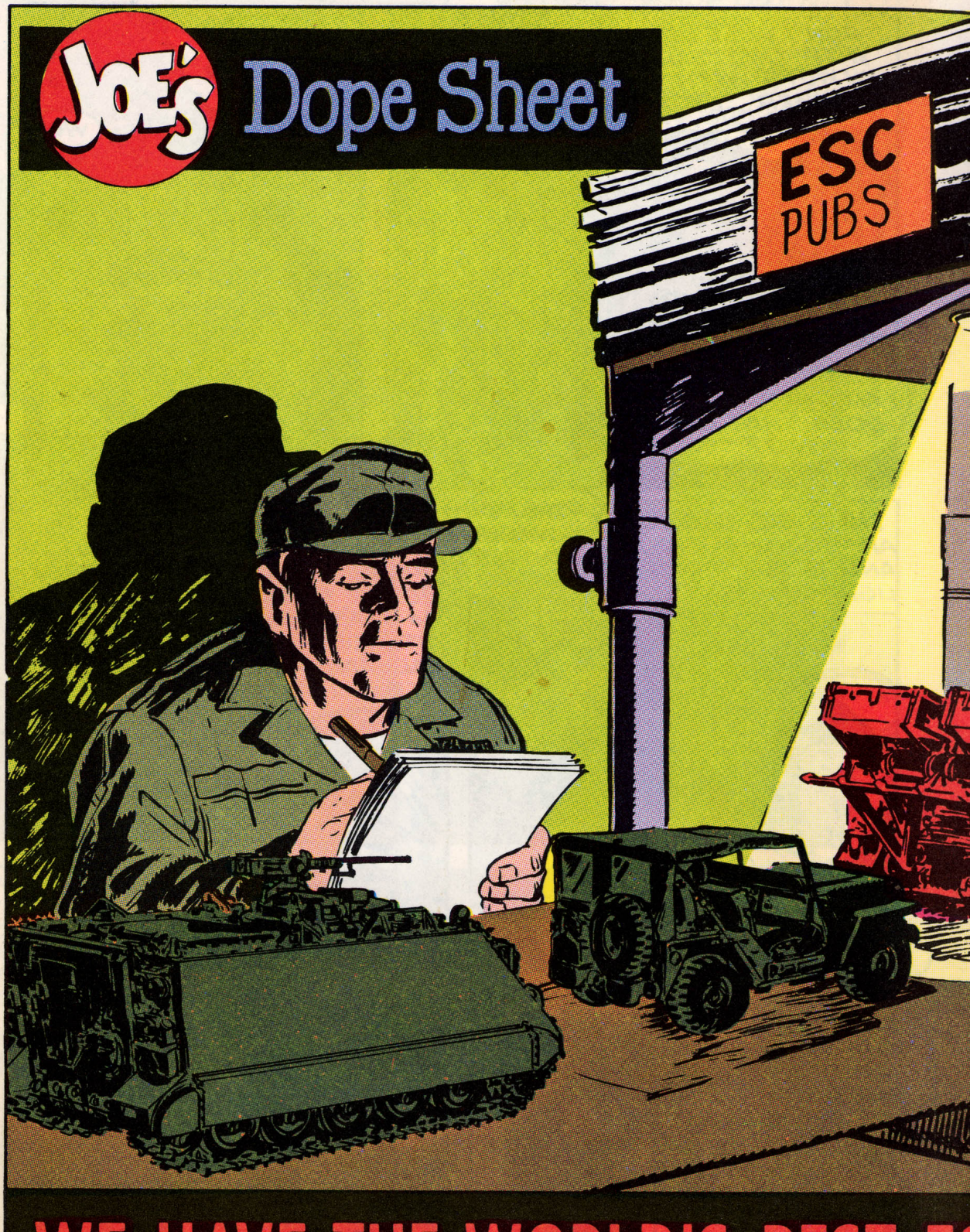
TECHNICAL MANUALS

TM 3-215, Dec Military Chemistry and Chemical Agents.
TM 3-1040-202-12, Dec Generator, Smoke, Mechanical, Pulse Jet, M3A3.
TM 5-2410-201-20, Dec Tractor, FT Cat Model 933.
TM 5-2410-202-20, Dec Tractor, FT, Cat D-6.
TM 5-2410-210-20P, Nov Tractor, FT, 1HC, TD-6.
TM 5-3431-209-15, Dec Welding Machine, Valentine Model 26381.
TM 5-3805-212-20P, Nov Intrenching Machine Unit Rig Model 4262.
TM 5-3895-207-10, Dec Roller, Galion CRG.
TM 5-6115-343-15, Dec Generator Set, 0.5 KW Martin.
TM 9-1000-209-12, Nov Davy Crockett.
TM 9-1100-200-20P, Nov Honest John.
TM 9-2300-223-20P, Dec Con. Auth Orgn Stk List.
TM 9-2320-238-20P, Oct Recovery Vehicle, Full Tracked Light, Armored, M578 (T120E1).
TM 10-500-6, Jan Air Delivery: 0-1E.
TM 10-500-18-1, Jan Airdrop: Rigging M100, ¼-Ton Cargo Trailer.
TM 10-500-19-2, Dec Airdrop —Rigging 105mm How on a Combat-Expend Platform.
TM 10-500-47-2, Dec Airdrop — Rigging M215, 2½-Ton, Dump Truck w/o Winch on Combat-Expend Platform.
TM 10-3930-233-10, Dec Truck, Lift, Fork, MHE-182.
TM 10-3930-233-20, Dec Truck, Lift, Fork, MHE-182.
TM 10-4520-201-20, Nov Heater, 250,000 BTU.
TM 10-4930-201-13, Nov rump, Dispensing, Hand-Driven, Piston-Type, w/ 20-ft Hose, 15-GPM.
TM 10-7710-201-10, Nov Organ Electrical.
TM 11-3610-201-20, Dec Printing and Dry Developing Machine ES-30A.
TM 11-5805-337-12, Nov Terminals, Telegraph AN/FCC-19 & AN/FCC-25.
TM 11-5805-339-15, Dec Diversity/ Non-Diversity Telegraph Terminal AN/ FGC-60(V).
TM 11-5815-291-15P, Nov Jack Assembly J-2110/G.
TM 11-5815-293-15P, Nov Switch Key & Lamp Assembly MX-4456/G.
TM 11-5815-294-15P, Nov Switch Key & Lamp Assembly MX-4455/G.
TM 11-5815-296-15P, Nov Jack Assembly J-2109/G.
TM 11-5820-509-12, Nov Radio Set AN/PRC-47.
TM 11-5830-233-20P, Nov Intercomm Station LS-200/F1.
TM 11-5935-206-15P, Nov Jack Assembly J-2098/G.
TM 11-5935-207-15P, Nov Jack Assembly J-2099/G.
TM 11-5935-208-15P, Nov Jack Assembly J-2101/G.
TM 11-5935-209-15P, Nov Jack Assembly J-2097/G.
TM 11-5935-210-15P Nov Jack Assembly J-2100/G.
TM 11-5935-211-15P, Nov Jack Assembly J-2102/G.
TM 11-6110-209-15P, Nov Distribution Box J-2157/G.
TM 11-6625-495-20P, Nov Preamplifiers AM-1842/USM, AM-1842A/USM, & AM-1842B/USM.
TM 11-6660-225-10, Nov Thermographs ML-77, ML-77-A, ML-277 and ML-277-A.
TM 11-6720-216-10, Dec Camera Set, Still Picture KS-19A3.
TM 11-6720-221-20P, Nov Camera Still Picture KD-28.
TM 11-6740-253-10, -20, Dec Drier, Photographic Print PH-684C/U.
TM 55-405-3, C3, Dec.
TM 55-405-10, Jan.
TM 55-1100-202-12-7, Dec (CH-21).
TM 55-1100-202-12-8, Dec (U-1).
TM 55-1100-202-12-9, Dec (CV-2).
TM 55-1100-202-12-10, Dec (CH-34).
TM 55-1100-202-12-11, Dec (UH-1).
TM 55-1100-203-12-1, Nov (CH-37).
TM 55-1100-224-12-5, Nov (UH-1).
TM 55-1510-202-20P, Nov (O-1A).
TM 55-1510-203-20P, Oct (U-6).
TM 55-1510-204-10, C1 Dec (OV-1).
TM 55-1510-205-10, Nov U-1.
TM 55-1510-205-20P, Oct U-1.
TM 55-1510-206-10, C4, Dec (CV-2).
TM 55-1520-205-20P, C2, Jan (CH-21).
TM 55-1520-206-20P, Dec (OH-23).
TM 55-1520-211-20P, Oct (UH-1).
TM 55-1520-215-25/2, Jan 63 and C1, Nov 63 (OH-13S).
TM 55-1520-216-10, Oct (OH-23E).
TM 55-1520-216-25/1, Oct (OH-23).
TM 55-1520-216-25/2, Oct (OH-23).
TM 55-1905-202-12P, C2, Dec LCM8.
TM 55-1925-205-20P, Oct Marine.
TM 55-1930-205-10, C1, Nov (LARC-V).
TM 55-2330-201-25P, Nov Cargo Transporter, 10-Ton (M1).
TM 55-2230-208-20P, Nov Rail.

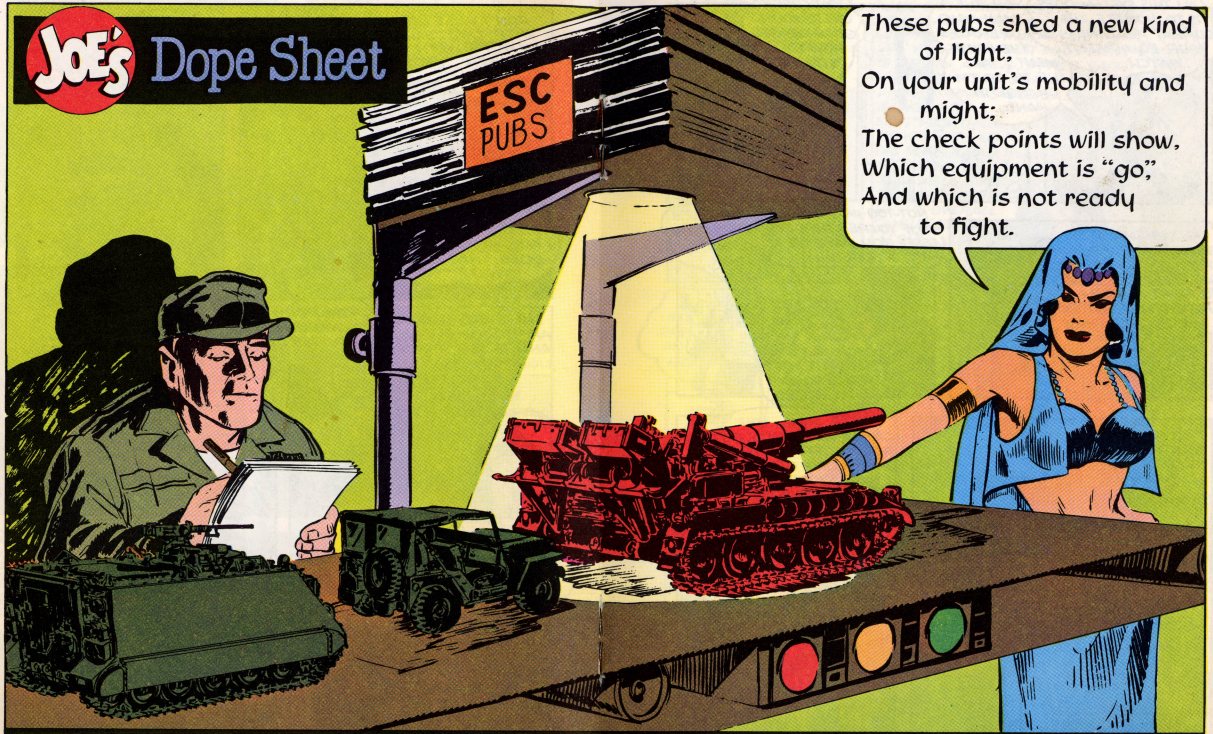
JOE'S DOPE
I Dream of Genie with the ESC
HOLD ON YOU GUYS... THAT'S HEADQUARTERS ON THE HORN.
NEED TO KNOW IF WE'RE RED, AMBER OR GREEN FOR THE OLD MAN'S EQUIPMENT PROFILE.
THEY'RE SENDING A NEW PATROL OUT TO RELIEVE US. NOW WE'LL BE ABLE TO TAKE A BREATHER AND GO OVER OUR EQUIPMENT FOR AN EQUIPMENT SERVICEABILITY CRITERIA (ESC) CHECKUP...
DIDN'T YOU HEAR ABOUT RED, AMBER OR GREEN? IF THE DRIVER DOESN'T COOL IT, WE'RE GOING TO BE ALL BLACK AND BLUE.
FEH! WOT'S WITH THIS ESC?
SHADDUP ALREADY... IT'S SOME KINDA COMBAT READINESS CHECK.

WE'RE SLIDING!
GRIND
CRUMBLE
CRUNCH
GR-REAT! JUST GREAT... JUS' WOT WE NEEDED...
HOP OUT N' BREAK OUT THE SHOVELS. I'LL GET MAINTENANCE ON THE HORN AND GET 'EM TO HELP US WITH THEIR RECOVERY VEHICLE.
?
CLUNK
HEY! LOOKIT... A LAMP!! JUS' LIKE THEM KIND IN THE ARABIAN NIGHTS...
LESSEE...
V-E-R-Y NICE... WHILE Y'R PLAYIN... I'LL CONTACT THE C.O. WE'RE STUCK IN STUFF RIGHT UP TO OUR EARS...
WONDER IF THIS THING REALLY WORKS??
R-ROGER WE'LL EXPECT OUR RELIEF IN ONE HOUR... RED ZULU, OUT...
AHEM! DO YOU REALIZE, SAHIB... YOUR RADIO IS IN THE AMBER?


DON'T WISE OFF AT ME WITH THAT "SAHIB" JAZZ. 'N WOT'S WITH THAT AMBER...EYOWWW!!
FEAR NOT "SAHIB." I AM A GENIE... HOW DOES THAT GRAB YOU?
A GENIE, HUH... WOT'S WITH THAT "AMBER" BUSINESS.
WOW!
SIMPLE SAHIB, THIS IS AN OPERATOR CHECK.
I HAVE BEEN READING AR 750-10 (MAR 63) AND THESE "TRAFFIC LIGHT" PUBS.
-THAT'S GOVERNMENT PROPERTY, KIDDO!
MAN! HE CAME RIGHT OUTA THIS LITTLE 'OL LAMP.
YOU SEE, THE AR SET UP THE SYSTEM. IT'S CARRIED OUT IN DETAIL IN THE ESC "TRAFFIC LIGHT" PUBS...THEY'RE TB AND TM CHANGES THAT GO ALONG WITH YOUR EQUIPMENT'S TECHNICAL MANUALS... LIKE THIS ONE... TB 9-2300-224-10/2 ON YOUR M113. YOU'VE ALSO GOT THEM FOR YOUR RADIOS, GUNS, TRUCKS, TANKS, ETC.
LET ME DEMONSTRATE... WITH YOUR PERMISSION, OF COURSE, SAHIB. NOW WE NEED A TRAFFIC LIGHT.
POOF
WOWEE! DID YOU SEE THAT...
BAH! MASS HYPNOSIS.



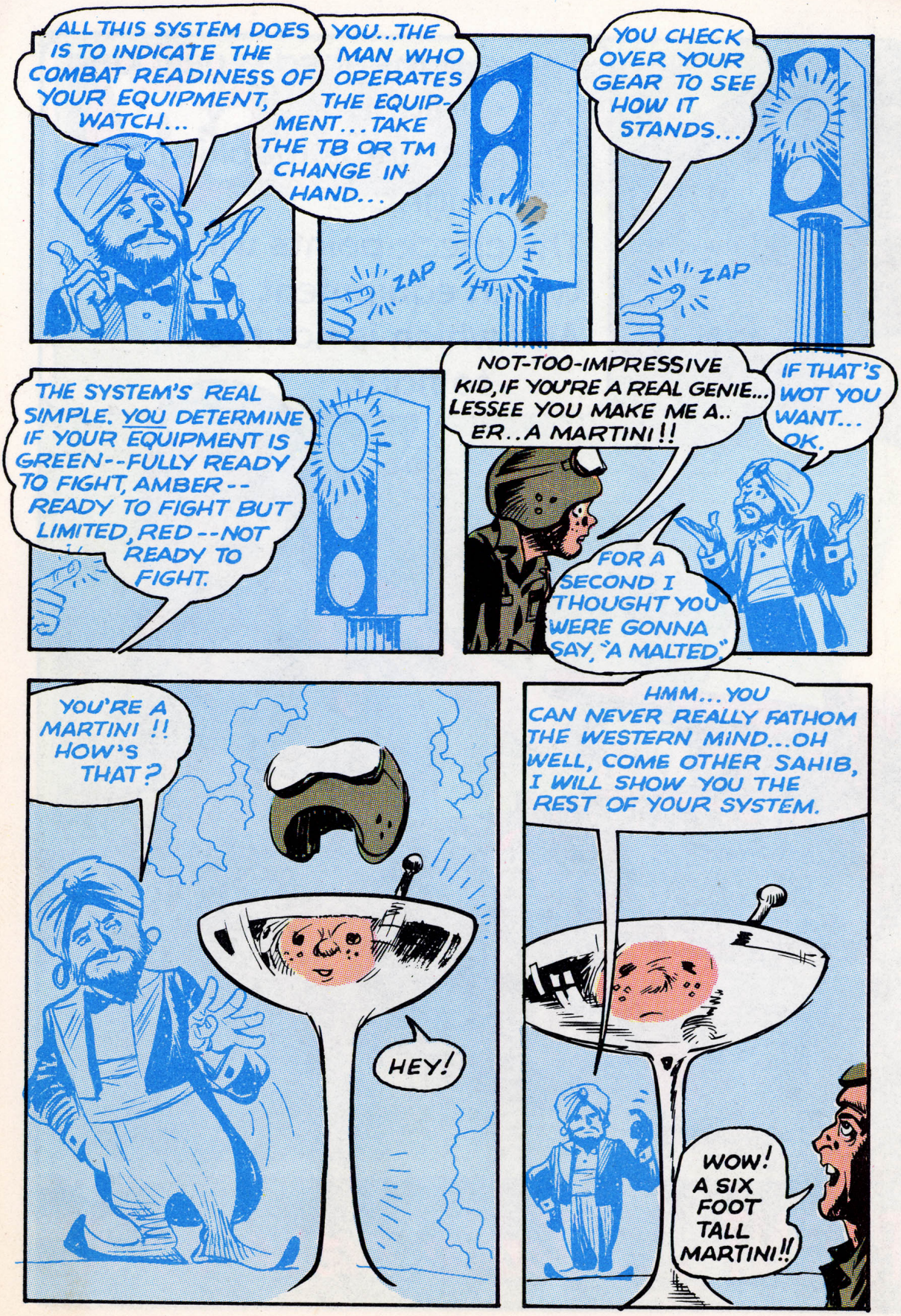
IF YOU WANT TO DISPLAY THIS CENTERPIECE ON YOUR BU



IF YOU WANT TO DISPLAY THIS CENTERPIECE ON YOUR BULLETIN BOARD, OPEN STAPLES, LIFT IT OUT AND PIN IT UP.

QUIPMENT ... *Take care of it*

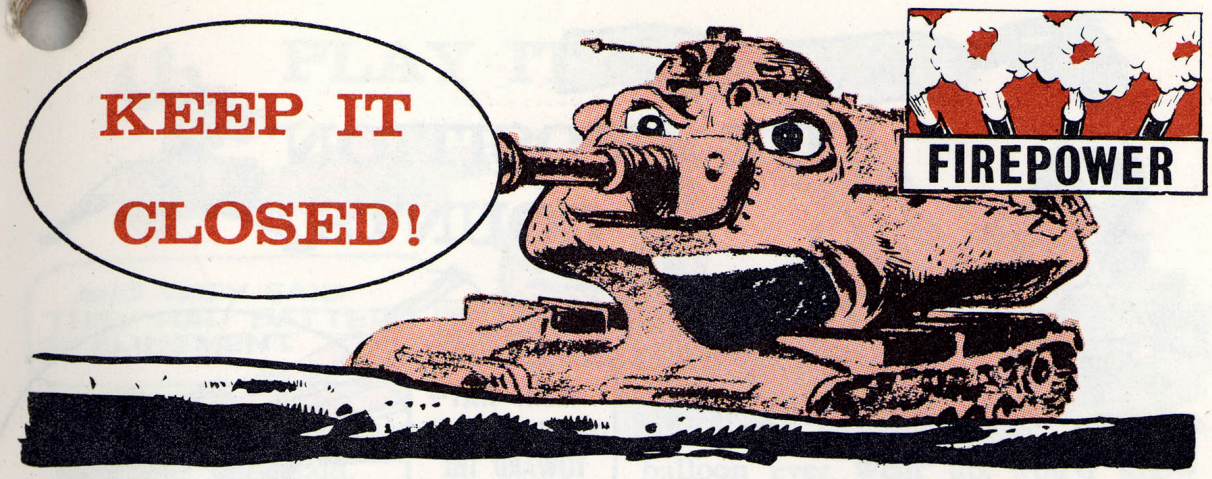
LLETIN BOARD, OPEN STAPLES, LIFT IT OUT AND PIN IT UP.


ALL THIS SYSTEM DOES IS TO INDICATE THE COMBAT READINESS OF YOUR EQUIPMENT, WATCH...
YOU...THE MAN WHO OPERATES THE EQUIPMENT...TAKE THE TB OR TM CHANGE IN HAND...
ZAP
YOU CHECK OVER YOUR GEAR TO SEE HOW IT STANDS...
ZAP
THE SYSTEM'S REAL SIMPLE. YOU DETERMINE IF YOUR EQUIPMENT IS GREEN--FULLY READY TO FIGHT, AMBER--READY TO FIGHT BUT LIMITED, RED--NOT READY TO FIGHT.
NOT-TOO-IMPRESSIVE KID, IF YOU'RE A REAL GENIE... LESSEE YOU MAKE ME A.. ER..A MARTINI!!
IF THAT'S WOT YOU WANT... OK.
FOR A SECOND I THOUGHT YOU WERE GONNA SAY, "A MALTED"
YOU'RE A MARTINI!! HOW'S THAT?
HEY!
HMM...YOU CAN NEVER REALLY FATHOM THE WESTERN MIND...OH WELL, COME OTHER SAHIB, I WILL SHOW YOU THE REST OF YOUR SYSTEM.
WOW! A SIX FOOT TALL MARTINI!!

YOU SEE, SAHIB, YOUR "ESC" ON THE M113 HAS A LIST OF CATEGORIES THAT YOU CHECK OUT LIKE ENGINE, COMMO, INSTRUMENTS, SUSPENSION ETC.
AND EACH GROUP HAS A SCORING SYSTEM WHICH YOU ADD UP FOR A FINAL TOTAL TO SEE WHETHER YOUR EQUIPMENT IS GREEN, AMBER OR RED, EACH EQUIPMENT'S SCORE IS INCLUDED IN YOUR UNIT'S SCORE... ALONG WITH SEVERAL OTHER THINGS...LIKE HOW THE OUTFIT RATES ON TRAINING, MEN AVAILABLE, ETC. TO MAKE UP THE UNIT'S OVERALL COMBAT-READINESS SCORE...OR PROFILE.
BLANK
AHHH! I SEE YOU DON'T DIG...LET US USE AN APPROPRIATE EXAMPLE.
LIKE WOT?
WOT ELSE, BUT A GIRL!
YEAH YEAH YEAH...
ZAP
POOF
HOLD IT! LEMME TRY IT-AHEM... LET'S SEE NOW. WOW WOT A DOLL.
HMM... OPTICAL SYSTEM... BEEYOOTIFUL...TEN POINTS AT LEAST.

NEXT...OH BOY! SUSPENSION... C-CRAZY... A BIT HEAVY IN THE HIPS THO...NINE POINTS!
NOW! LEMME INSPECT THE HULL!!
THAT'S ENOUGH, SAHIB... YOU GOT THE IDEA...
POOF
ZAP
SHE'S GONE! WOT Y'DO THAT FOR? GROANNNN
ALAS! IT IS KISMET...AND YOU ARE BUT A STRANGER IN PARADISE.
LET US TRANSFORM YOUR FRIEND, FOR THAT DUST CLOUD HERALDS YOUR RELIEF.
-SOB- WOT A DOLL.
UN-POOF
AHAH! HE IS BACK! AND SO... I SHALL LEAVE.
ZAP
SWOOSH
EEK!
And, as the sun sets and the night descends, civilization arrives. . . .
WOT'S ALL THIS ABOUT A GENIE, A SIX-FOOT MARTOONIE, AND DANCING GIRLS, YET...OH BOY! YOU GUYS WERE OUT IN THE SUN TOO LONG...
-SOB- WOT A DOLL.
HIC!

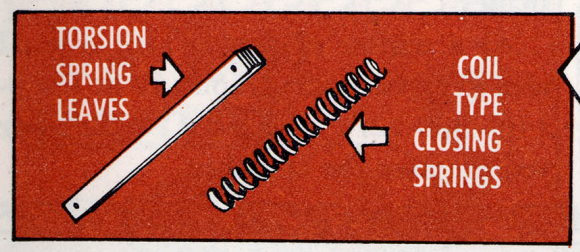
KEEP IT CLOSED!



A real crying shame how a tiny gizmo like a weak breechblock closing spring can put monsters like the M60 tank and the M108 and M109 self-propelled howitzers out of the fight.

Yet it can happen if you leave the breech mechanism open while these weapons're on a non-firing status or standing idle in a gun or vehicle park.

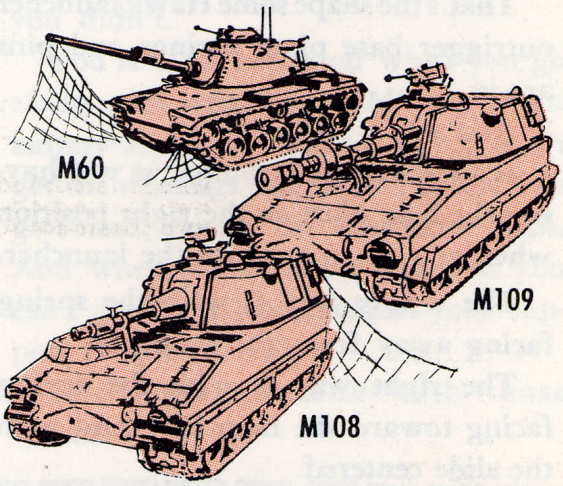
Here's what happens: The torsion spring leaves on these critters, just like the coil-type closing springs on some of

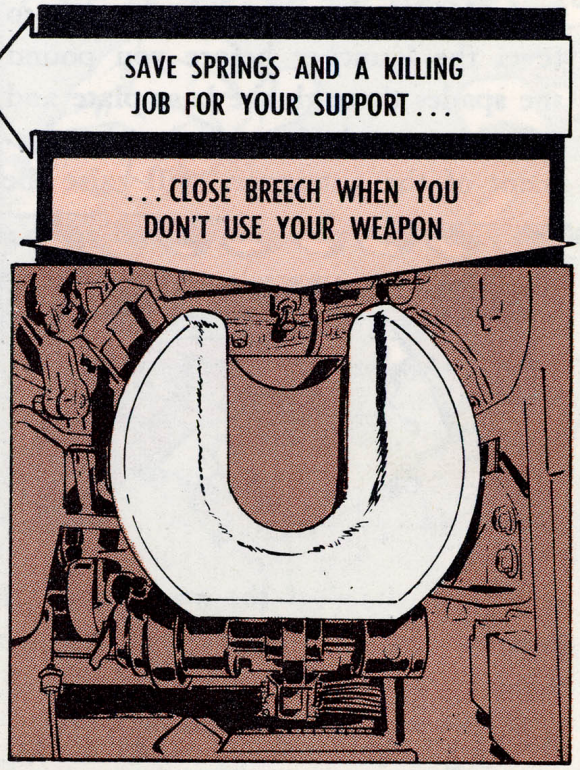


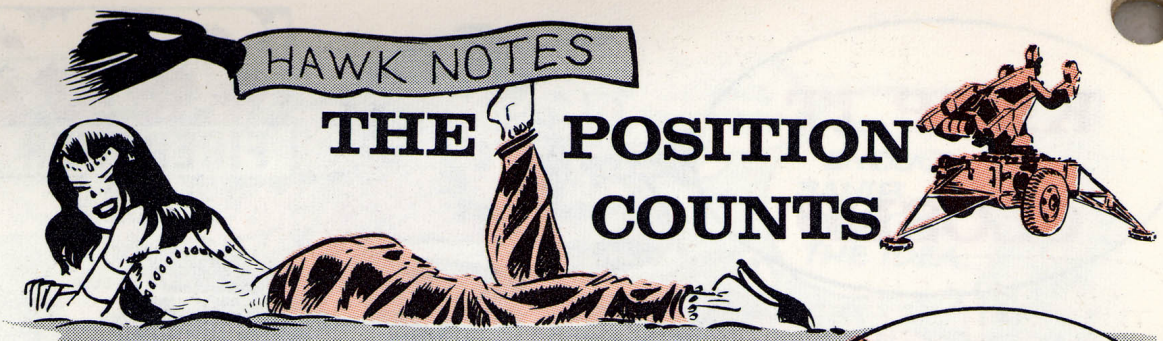
the other weapons, take set soonest when they're twisted or compressed like that for a long while. Of course, you can adjust 'em a couple times, but after that they need replacing . . . and this calls for a time-killing job by your support guys.

So, be clever. Develop a tiny habit to prevent all this sweat. Close the breech every time your weapon's gonna be idle for a spell.

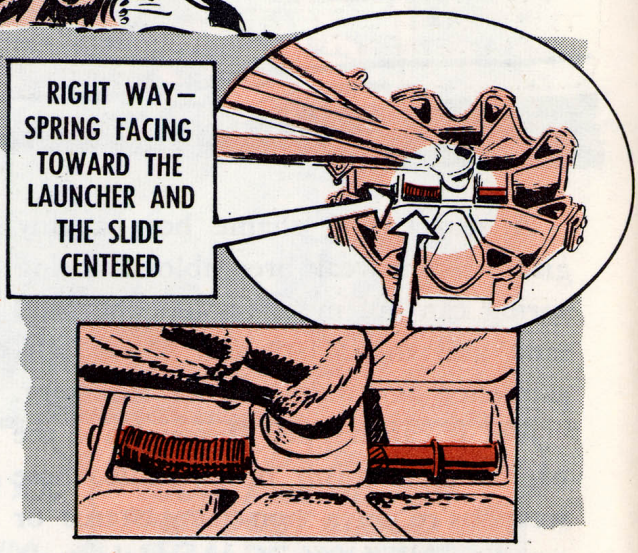
'Nuff said?







THE POSITION COUNTS



Battered and busted.

That's the shape some Hawk launcher outrigger base plate springs and pins are in.

And why?

It's something as simple as **not having** the base plate in the right position when you go to emplace the launcher.

The wrong way is with the spring facing away from the launcher.

The right way is with the spring facing toward the launcher. And with the slide centered.

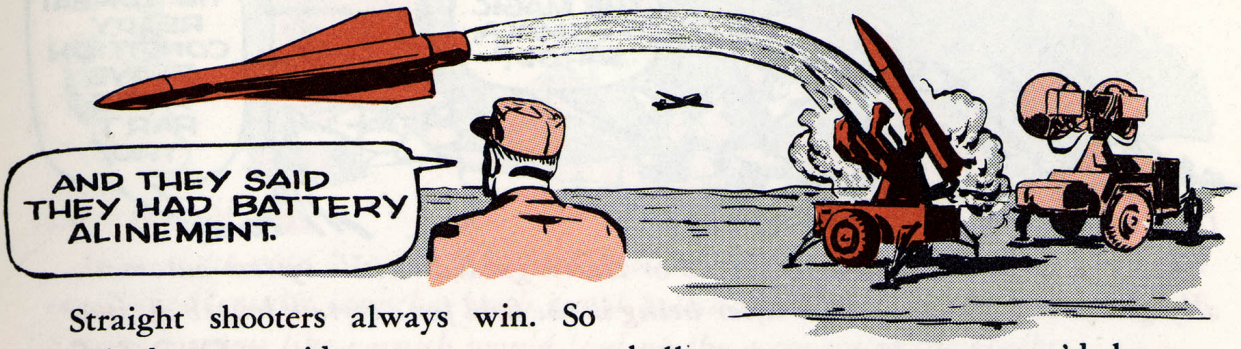
And don't forget that you want to level the launcher before you pound the spades through the base plate and into the ground. If you don't, the movement of the outriggers will raise the deuce with the pin and spring, seeing's how there's no movement of the base plates once they're held in place by the spades.

As a matter of fact . . . it's a good idea to eyeball paragraph 110 in TM 9-1400-500-12/1 (Aug 61) whenever you emplace the launcher.

WATER KEEPER-OUTER

Just in time—if the wet season in your neck of the woods is on the way. That's what MWO 9-1440-500-30/16 (24 Apr 63) is. What the MWO does—after it's been applied by your support unit—is waterproof your launcher controls. 'Course . . . the MWO is a good deal even if you don't see any rain for months on end and snow maybe once every year or two.

PLAY IT STRAIGHT



Straight shooters always win. So somebody once said.

And straight shooters (like not pulling the wool over a guy's eyes) will give a Hawk outfit a lot better chance of shooting straight.

Working on battery alinement is a good f'rinstance. Maybe the alinement just won't work out. So you slip the synchros in different pieces of equipment to get the readings you want.

Things look good, but you still don't have battery alinement. And if the balloon ever went up, you'd know you didn't.

You're a lot better off when you go along with what your TM's say about battery alinement. That is, if you don't get the readings you should on the first go-round, repeat the alinement steps. And when you're convinced that you can't get the alinement, call your support people for help.

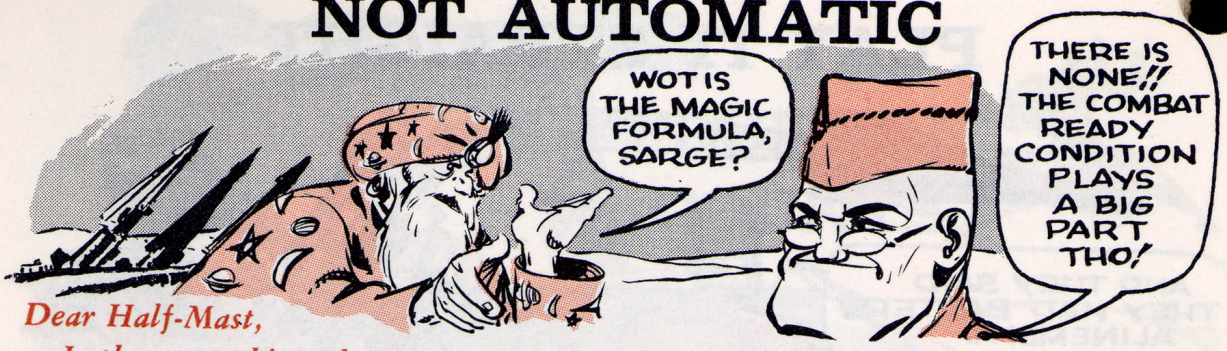
Don't play around with those synchros.

That's what it's gonna be when it comes to removing and replacing the tracks on your Hawk loader now that you have a tool to help you do the job. It's a fact. The tool shows up as Fixture: Track connecting on page 112.1 of Ch 1 (7 Jun 63) to TM 9-1450-500-20P.

HANDS OFF

If you're one of the guys guilty of piddlin' with the signal comparator (FSN 4935-345-8018) part of your HAWK transmitter test set, the word is DON'T! Maintenance on this item is verboten at anything less than depot level. So, if you find something wrong with yours, kick it back quick-like to your support.

NOT AUTOMATIC



Dear Half-Mast,

Is there anything that says a Nike or Hawk guided missile system automatically gets a complete overhaul after being in the field for a certain length of time?

CWO T. C.

Dear Mister T. C.,

No, Sir.

The operable condition and combat readiness of a system play a major part in deciding whether it needs a major overhaul.

The deal is that an Army area commander starts the ball rolling by asking that a particular piece of equipment be sent to a depot for overhaul or rebuild when it's figured the item has had the course. The field maintenance people who are supporting the equipment and a team of specialists from the depot make a detailed inspection of the item. Based on the inspection, the support people decide whether the work is needed.

Half-Mast

FIT TO BE TAPED

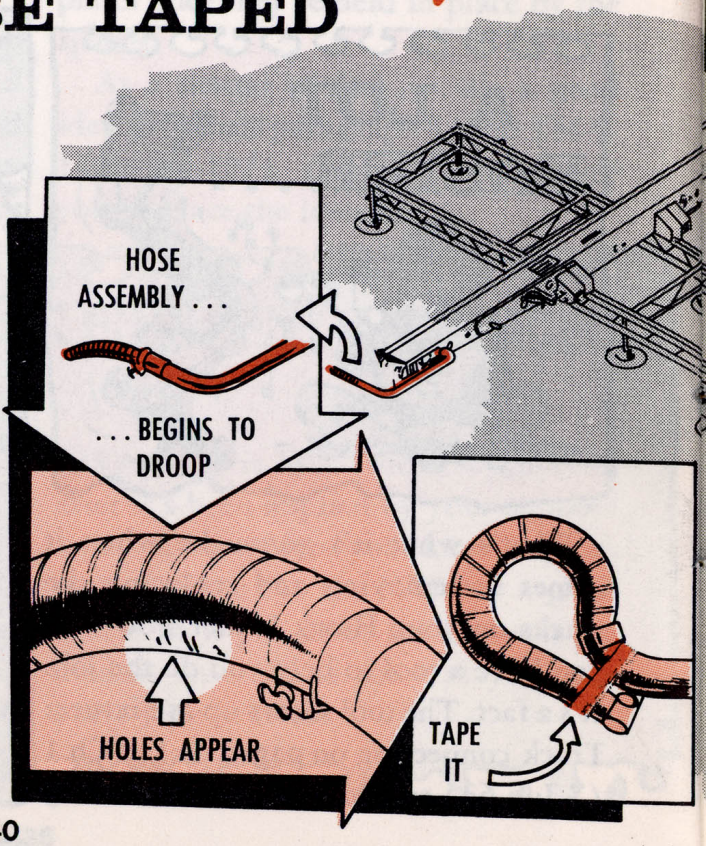
It sure can get to looking mighty sad.

That description fits the hose assembly that's put on the Nike-Hercules launcher by MWO Y75-W84 and Y86-W5. The hose assembly really goes into a drooping act after a spell.

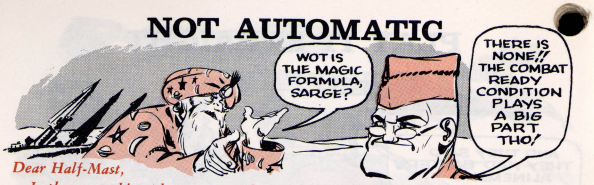
It wouldn't be bad if the assembly just drooped. Trouble is . . . the hose develops holes at the bend, making it tough to pull hot air away from the pressure guidance set in the missile.

There's a way to beat the problem, tho . . . and all it takes is some electrical insulation tape.

What you do when you're not using the hose assembly is bend it back and then run about four turns of the tape around the tip of the hose and the pipe.



NOT AUTOMATIC



Dear Half-Mast,

Is there anything that says a Nike or Hawk guided missile system automatically gets a complete overhaul after being in the field for a certain length of time?

CWO T. C.

Dear Mister T. C.,

No, Sir.

The operable condition and combat readiness of a system play a major part in deciding whether it needs a major overhaul.

The deal is that an Army area commander starts the ball rolling by asking that a particular piece of equipment be sent to a depot for overhaul or rebuild when it's figured the item has had the course. The field maintenance people who are supporting the equipment and a team of specialists from the depot make a detailed inspection of the item. Based on the inspection, the support people decide whether the work is needed.

Half-Mast

FIT TO BE TAPED

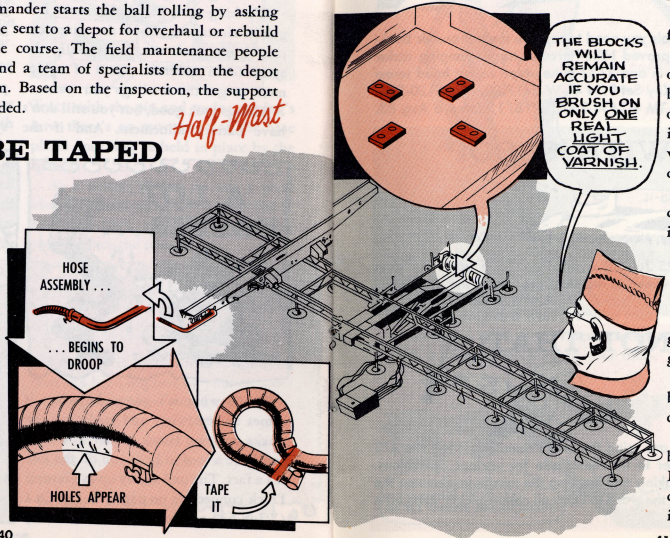
It sure can get to looking mighty sad.

That description fits the hose assembly that's put on the Nike-Hercules launcher by MWO Y75-W84 and Y86-W5. The hose assembly really goes into a drooping act after a spell.

It wouldn't be bad if the assembly just drooped. Trouble is . . . the hose develops holes at the bend, making it tough to pull hot air away from the pressure guidance set in the missile.

There's a way to beat the problem, tho . . . and all it takes is some electrical insulation tape.

What you do when you're not using the hose assembly is bend it back and then run about four turns of the tape around the tip of the hose and the pipe.



AS REQUESTED

Dear Half-Mast,

How come note 4 to LO 9-1440-250-20A says to clean the leveling blocks on our Nike-Hercules launcher with metal polish and then coat 'em with varnish? I mean it seems like varnish would foul up the accuracy of the blocks.

The way I see it, the best thing would be to keep a light coat of grease on the blocks . . . and then wipe it off before using the blocks.

SFC H. C.

Dear Sergeant H. C.,

It looks like things have come around full circle.

The old LO did call for using grease on the blocks. But people on site didn't buy this. They said the grease rubbed off on their clothing or whatever else it touched. And they also had a few words to say about the way dirt and dust would collect in the grease.

Grease that wasn't there, or was dirty, was an open invitation for an inspector to toss around a few gigs.

The artillery guys didn't just say the grease was giving 'em fits . . . they suggested that varnish be used instead.

The people up the maintenance line bought this idea . . . and the LO was changed.

You're right about the varnish maybe fouling up the accuracy of the blocks. It will—if you put on a coupla thick coats. The accuracy won't change, tho, if you brush on one real light coat.

Half-Mast

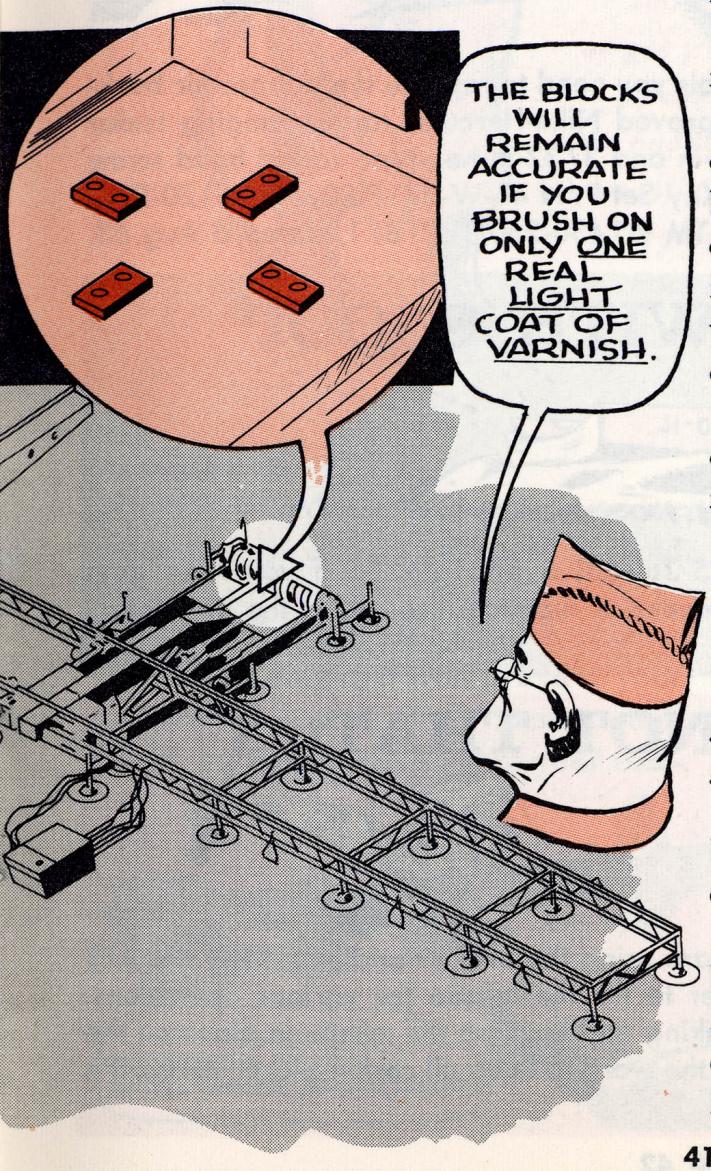
AS REQUESTED

Dear Half-Mast,

How come note 4 to LO 9-1440-250-20A says to clean the leveling blocks on our Nike-Hercules launcher with metal polish and then coat 'em with varnish? I mean it seems like varnish would foul up the accuracy of the blocks.

The way I see it, the best thing would be to keep a light coat of grease on the blocks . . . and then wipe it off before using the blocks.

SFC H. C.



Dear Sergeant H. C.,

It looks like things have come around full circle.

The old LO did call for using grease on the blocks. But people on site didn't buy this. They said the grease rubbed off on their clothing or whatever else it touched. And they also had a few words to say about the way dirt and dust would collect in the grease.

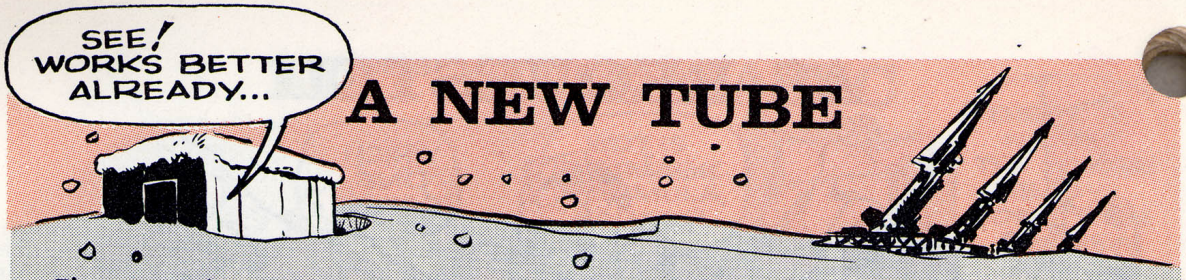
Grease that wasn't there, or was dirty, was an open invitation for an inspector to toss around a few gigs.

The artillery guys didn't just say the grease was giving 'em fits . . . they suggested that varnish be used instead.

The people up the maintenance line bought this idea . . . and the LO was changed.

You're right about the varnish maybe fouling up the accuracy of the blocks. It will—if you put on a coupla thick coats. The accuracy won't change, tho, if you brush on one real light coat.

Half-Mast



A NEW TUBE

Electron tube type 7410 is the latest to hit the scene for use in the different power supplies in your Nike-Hercules BC and RC vans. The 7410's, FSN 5960-804-9034, work better in cold weather than the tube now in the power supplies—the 6901—and want to be used in place of the 6901 when you latch on to 'em. The 7410 is listed in three of your support unit's TM's—9-1430-250-35P/10/1 (Jun 63) . . . 9-4940-251-35P/2/1 (Jul 63) . . . and 9-4940-250-35P/2/1 (Jul 63).

TOOLS AVAILABLE

Don't let anyone kid you . . . the tools you need to replace the panoramic backward wave oscillator tube in your Improved Nike-Hercules target ranging radar **are** listed in a publication. The 3/16-in and 3/32-in hex-type socket head screw keys needed for the job are part of Key Set P/N 41-W-2417-80, FSN 5120-204-0972 (QM), authorized on page 6 of TM 9-1430-250-12P/8/1, dated 6 Aug 63.

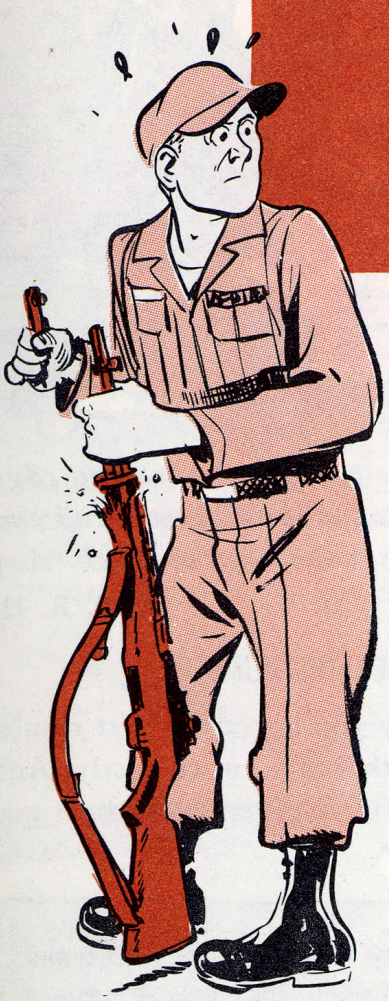
LOADED WITH SCOOP

That's what TM 9-1400-250-12 (25 Jul 63) is all right. So if you Nike guys want some good information on preventive maintenance, keep the TM handy—not buried deep in a binder.

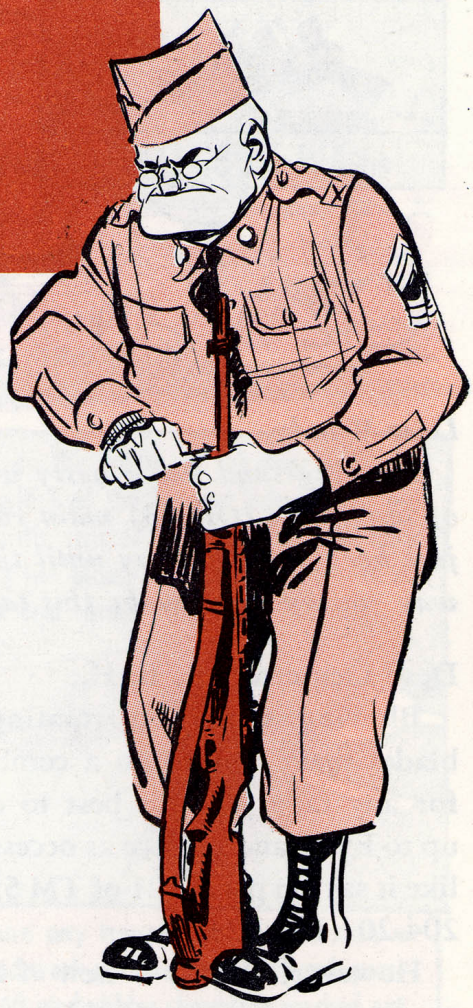
NO, NO, NOT THAT!

Word's filtered in that some types are using the brake handle on their XM 473 Hercules body section truck as a lever to lift the missile for various operations. That's bad! The handle's only for braking and keeping the missile in place on the truck—not for anything else. So, pass the word to keep all cotton-pickin' mitts off'n it otherwise, hear!

DON'T 'UGH' THIS PLUG



Dear Half-Mast,
What's the best way
to remove
an M14's
gas cylinder plug
that's been put on
too tight
or got frozen in
by carbon?
My buddy busted
his rifle's stock
trying to
wrestle his off.
PFC J. P. B.



Dear Private J. P. B.,

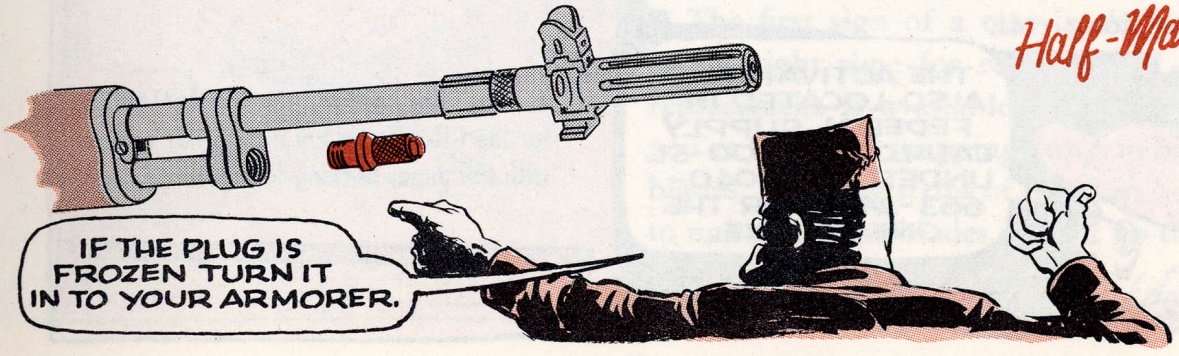
Prevention's the best cure in a case like this, of course, but for that, hold one.

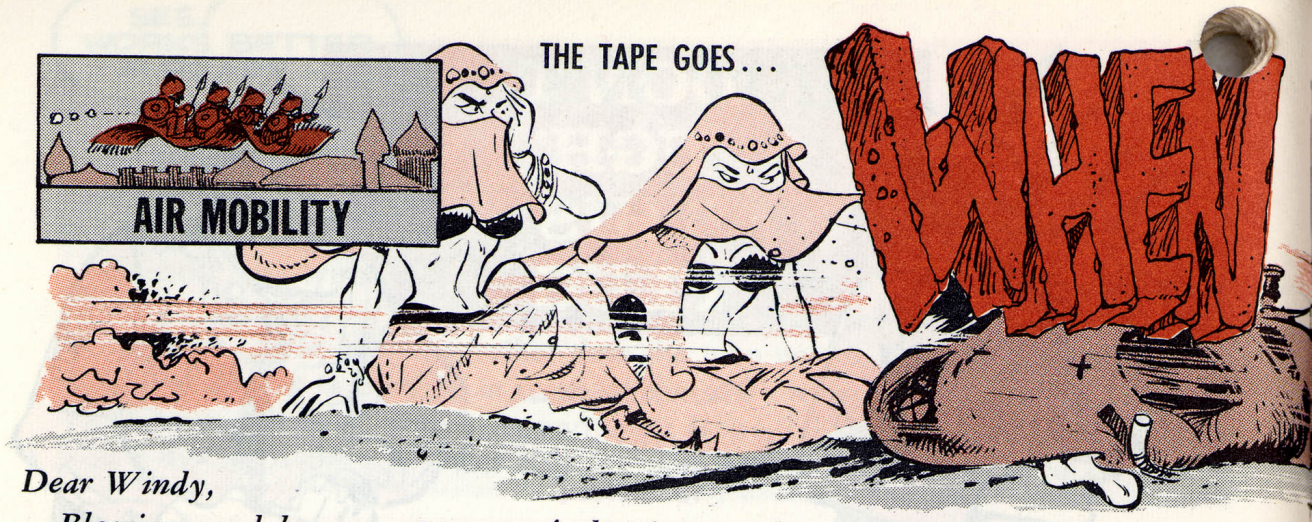
First off, if you have a frozen or overtightened plug that won't yield to your combination tool, don't mess around with it. Turn it in quick to your company armorer. He has a vise and brass clamps to hold the M14 while he works on it.

And now, prevention:

When you're installing the plug, tighten it to snug only—just tight enough to hold. No muscle required.

Half-Mast





Dear Windy,

Blowing sand has a nasty way of chewing up the tape on the leading edge of our Sioux (OH-13) main rotor blades. It starts out at the outboard end and just keeps eating away until the blades are finally thrown out of track. Any way you know to make this tape stick?

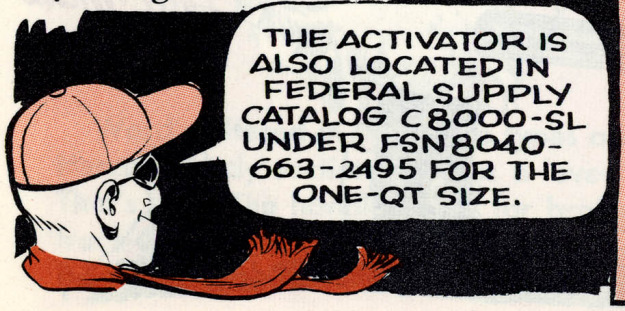
Lt R. B. H.

Dear Lieutenant R. B. H.,

Blowing sand and rotating rotor blades make too tough a combination for any tape job. It's best to chalk it up to FWT and replace as necessary . . . like it says in para 7-21 of TM 55-1520-204-20 (Feb 62).

However, there's a new 4-in wide tape out which may hold up longer. It's a solvent-activated tape (scotch-cal No. 455) which sticks to the stainless steel leading edge much better than the old pressure sensitive tape. You need activator A-2 (cyclohexanone) to apply it.

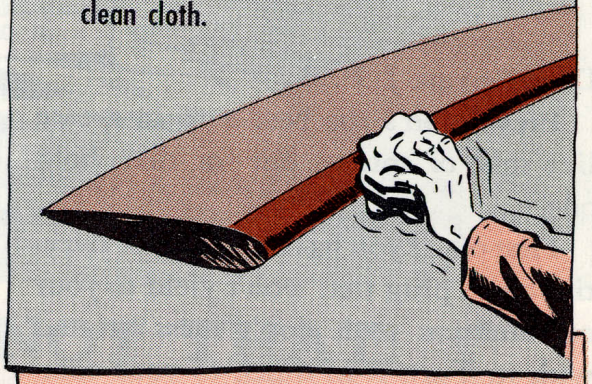
This tape is listed in Federal Supply Catalog C8000-SL and C8000-ML under FSN 8030-664-4894 as a 4-in wide, 50-yd long roll.



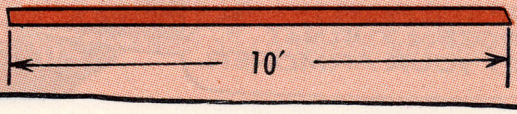
BY THE NUMBERS

Naturally you'll get the best results if you put this tape on correctly. And here's a good five-step procedure you can follow:

1. Thoroughly clean the leading edge with aliphatic naptha. Then wipe dry with a clean cloth.



2. Cut the tape to the right length (10 feet for the OH-13) and lay it on a flat surface with the paper backing facing up.



THE TAPE GOES...

WHEN SAND BLOWS

Dear Windy,

Blowing sand has a nasty way of chewing up the tape on the leading edge of our Sioux (OH-13) main rotor blades. It starts out at the outboard end and just keeps eating away until the blades are finally thrown out of track. Any way you know to make this tape stick?

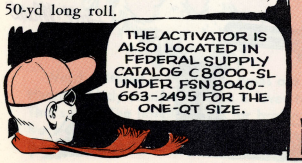
Lt R. B. H.

Dear Lieutenant R. B. H.,

Blowing sand and rotating rotor blades make too tough a combination for any tape job. It's best to chalk it up to FWT and replace as necessary . . . like it says in para 7-21 of TM 55-1520-204-20 (Feb 62).

However, there's a new 4-in wide tape out which may hold up longer. It's a solvent-activated tape (scotch-cal No. 455) which sticks to the stainless steel leading edge much better than the old pressure sensitive tape. You need activator A-2 (cyclohexanone) to apply it.

This tape is listed in Federal Supply Catalog C8000-SL and C8000-ML under FSN 8030-664-4894 as a 4-in wide, 50-yd long roll.

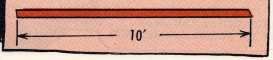


BY THE NUMBERS

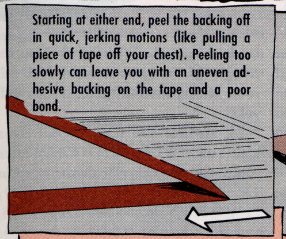
Naturally you'll get the best results if you put this tape on correctly. And here's a good five-step procedure you can follow:

1. Thoroughly clean the leading edge with aliphatic naptha. Then wipe dry with a clean cloth.

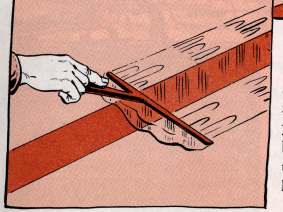
2. Cut the tape to the right length (10 feet for the OH-13) and lay it on a flat surface with the paper backing facing up.



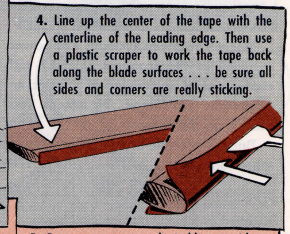
Starting at either end, peel the backing off in quick, jerking motions (like pulling a piece of tape off your chest). Peeling too slowly can leave you with an uneven adhesive backing on the tape and a poor bond.



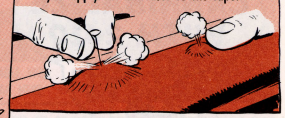
3. Saturate a felt squeegee in a pan of the activator, blotting off the excess activator on a clean cloth. Now activate the entire tape surface using parallel strokes with the squeegee. Be sure each stroke overlaps the one before it by approximately a half inch. Putting on the activator with circular motions will give you an uneven film.



4. Line up the center of the tape with the centerline of the leading edge. Then use a plastic scraper to work the tape back along the blade surfaces . . . be sure all sides and corners are really sticking.



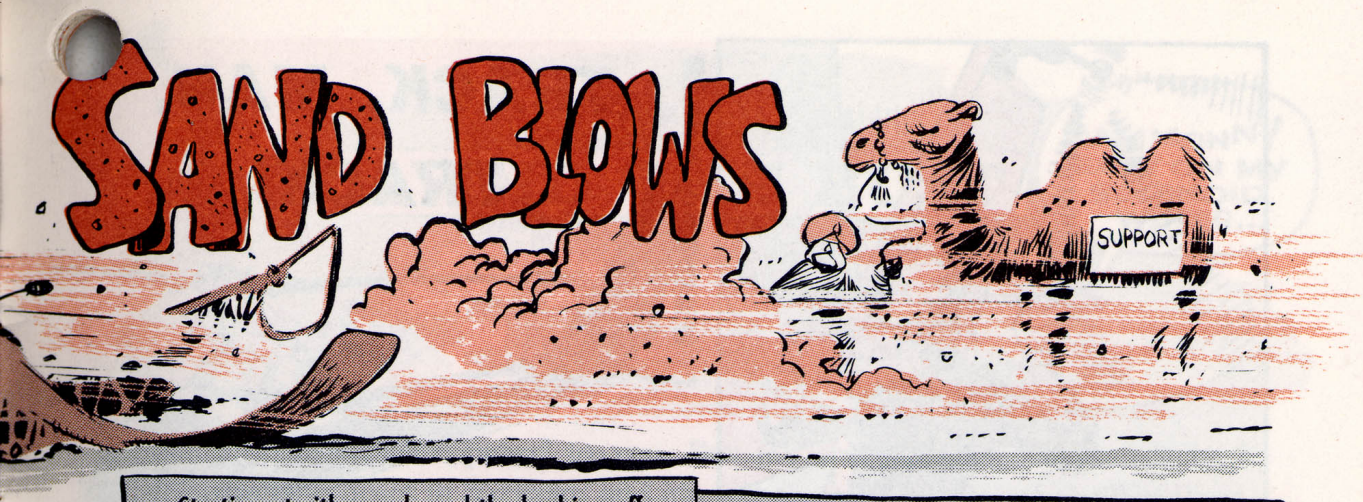
5. Puncture any trapped air blisters with a pin and work out the air with thumb pressure. All air bubbles should be worked out ASAP and no later than 5 minutes after you apply the activator to the tape.



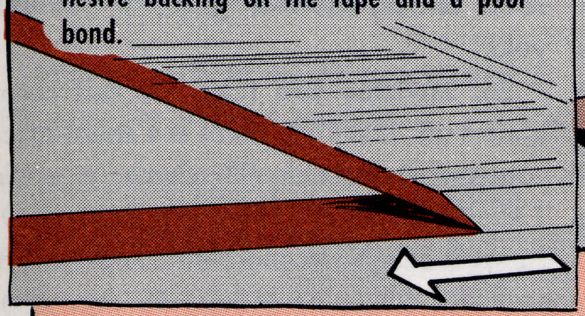
REMOVE IMMEDIATELY

The first sign of a tear in the tape is the right time for replacing. If no replacement is available immediately, you're better off stripping down to bare blades. Flapping strips of tape just help to unbalance the blades and set up that high-pitched in-flight whine.

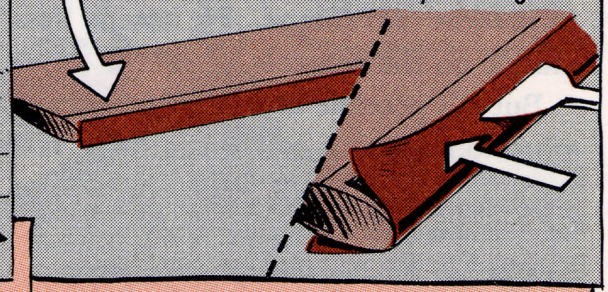
Windy



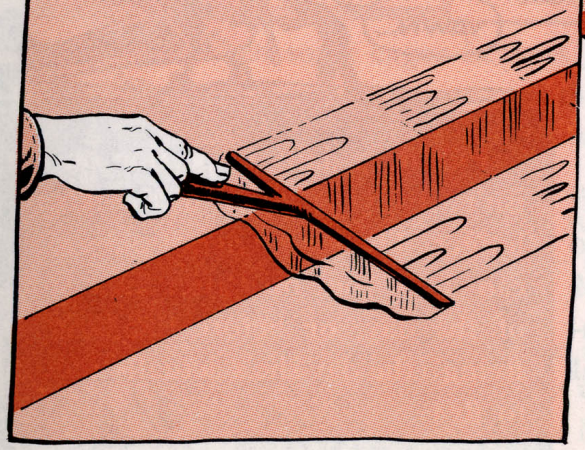
Starting at either end, peel the backing off in quick, jerking motions (like pulling a piece of tape off your chest). Peeling too slowly can leave you with an uneven adhesive backing on the tape and a poor bond.



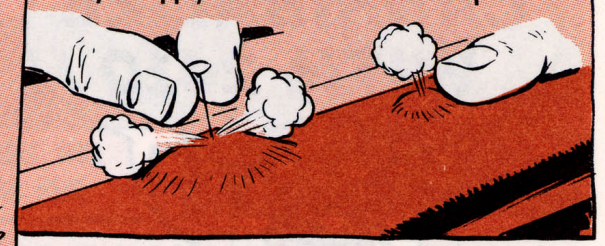
4. Line up the center of the tape with the centerline of the leading edge. Then use a plastic scraper to work the tape back along the blade surfaces . . . be sure all sides and corners are really sticking.



3. Saturate a felt squeegee in a pan of the activator, blotting off the excess activator on a clean cloth. Now activate the entire tape surface using parallel strokes with the squeegee. Be sure each stroke overlaps the one before it by approximately a half inch. Putting on the activator with circular motions will give you an uneven film.



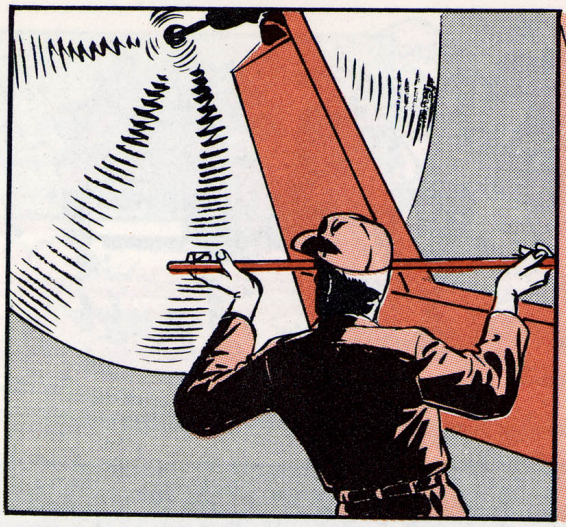
5. Puncture any trapped air blisters with a pin and work out the air with thumb pressure. All air bubbles should be worked out ASAP and no later than 5 minutes after you apply the activator to the tape.



REMOVE IMMEDIATELY

The first sign of a tear in the tape is the right time for replacing. If no replacement is available immediately, you're better off stripping down to bare blades. Flapping strips of tape just help to unbalance the blades and set up that high-pitched in-flight whine.

Windy



TRACK, MAN, TRACK!

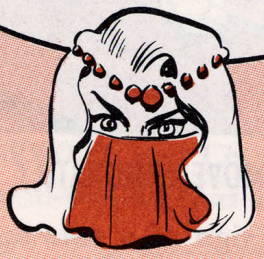
There's no doubt about it. The power cylinder in the Iroquois (UH-1) tail rotor control system gives a pilot an important advantage. He needs less muscle on the controls.

But it's possible that high frequency vibrations, which tell the pilot a tail rotor is out of track, will not always be felt on the controls. They may be dampened out by the cylinder servo.

'Course, with the tail rotor out of track (and nobody the wiser) something's got to give—maybe the tail rotor slider, the hub grip, or the hub yoke!

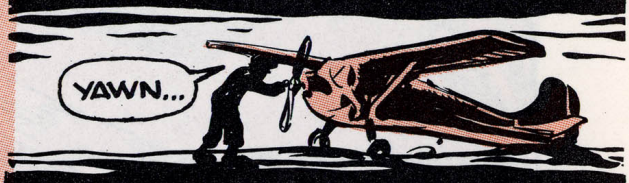
So, anytime you take the tail rotor blades off, tracking them is a **must** after you put them back. That's the poop in TM 55-1520-211-20 (14 Mar 63), Chap 2, Sect VIII, page 8-23, para 8-58, and TM 55-1520-210-20 (9 Apr 63), Chap 2, Sect VIII, page 8-20, para 8-42.

CANNIBALIZE WITH 2410

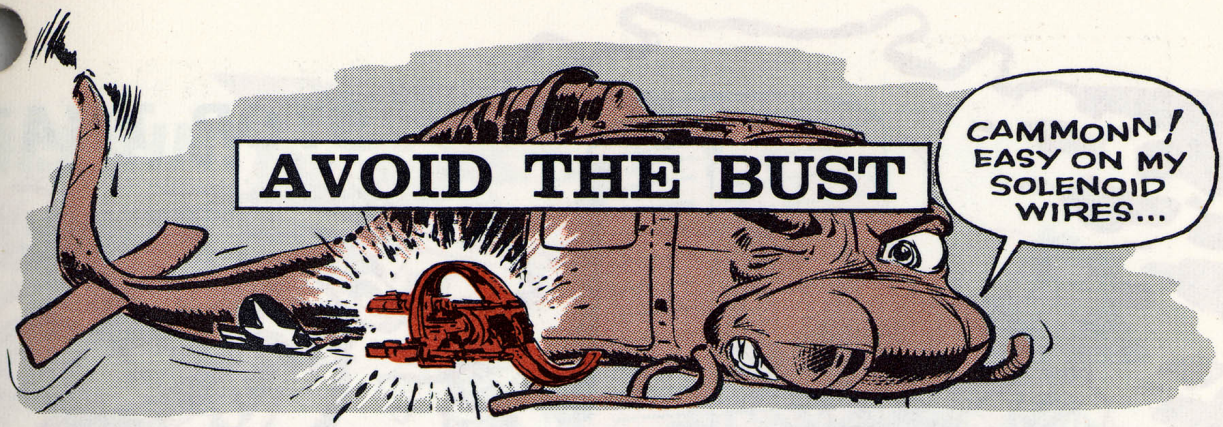


Every cannibalization is an aircraft removal and installation action. So 2410 it! You can foul up AVSCOM records at St. Louis if there's no "Component Removal and Repair/Overhaul Record" on file to cover the action.

A L-O-N-G DAILY



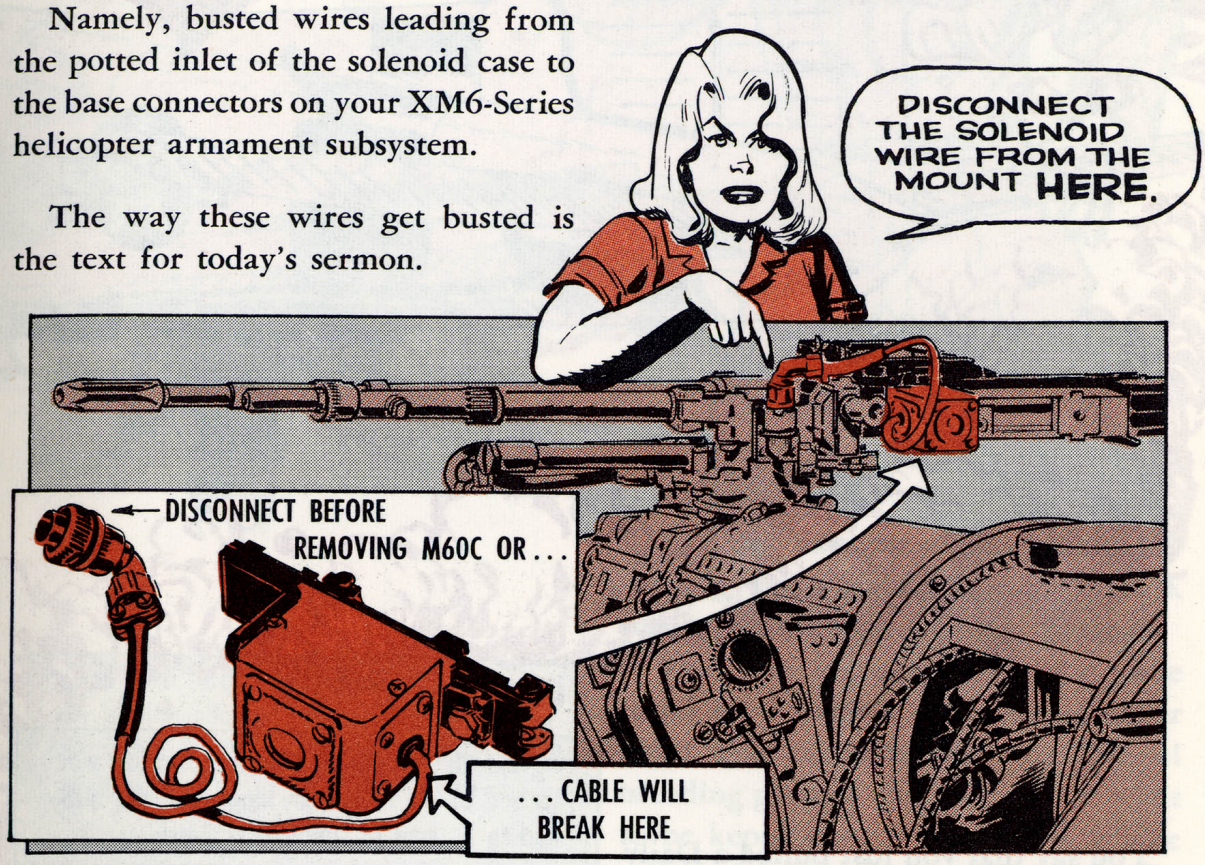
Pulling a daily inspection on a bird isn't always a daily deal—it can be longer. The maintenance pubs say you can check your bird after the last flight of the day, **or** before the next day's flying (the day she's actually scheduled to fly).



Maybe it's never happened to you. But it's sure 'nuff been a headache to a lot of your buddies in Vietnam and elsewhere on both sides of the Big Ponds.

Namely, busted wires leading from the potted inlet of the solenoid case to the base connectors on your XM6-Series helicopter armament subsystem.

The way these wires get busted is the text for today's sermon.



Seems like when some eager beavers go to remove the M60C machine gun mount from their birds, they just pull the locking handle and unhook the gun from the mounting bracket and start walking off. And then—snap!—another gun's out of business.

So, make this your No. 1 rule in the future:

Always disconnect the solenoid wire from the mount BEFORE you remove the machine gun.

Trouble is, there're no quick-change connectors available yet, which means you have to take a full second to twist the connector to unlock it.

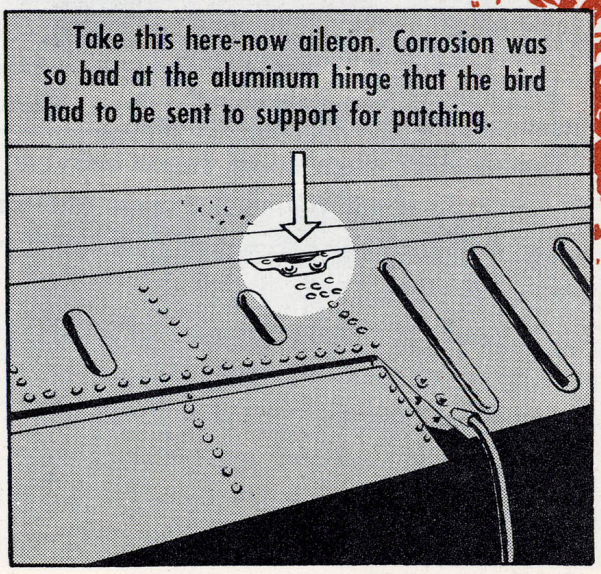
But, it'll be worth the trouble, believe it!

STOP THAT

You say that you just pulled a Daily on your Seminole (U-8) in record time, Private Murphy? Congratulations.

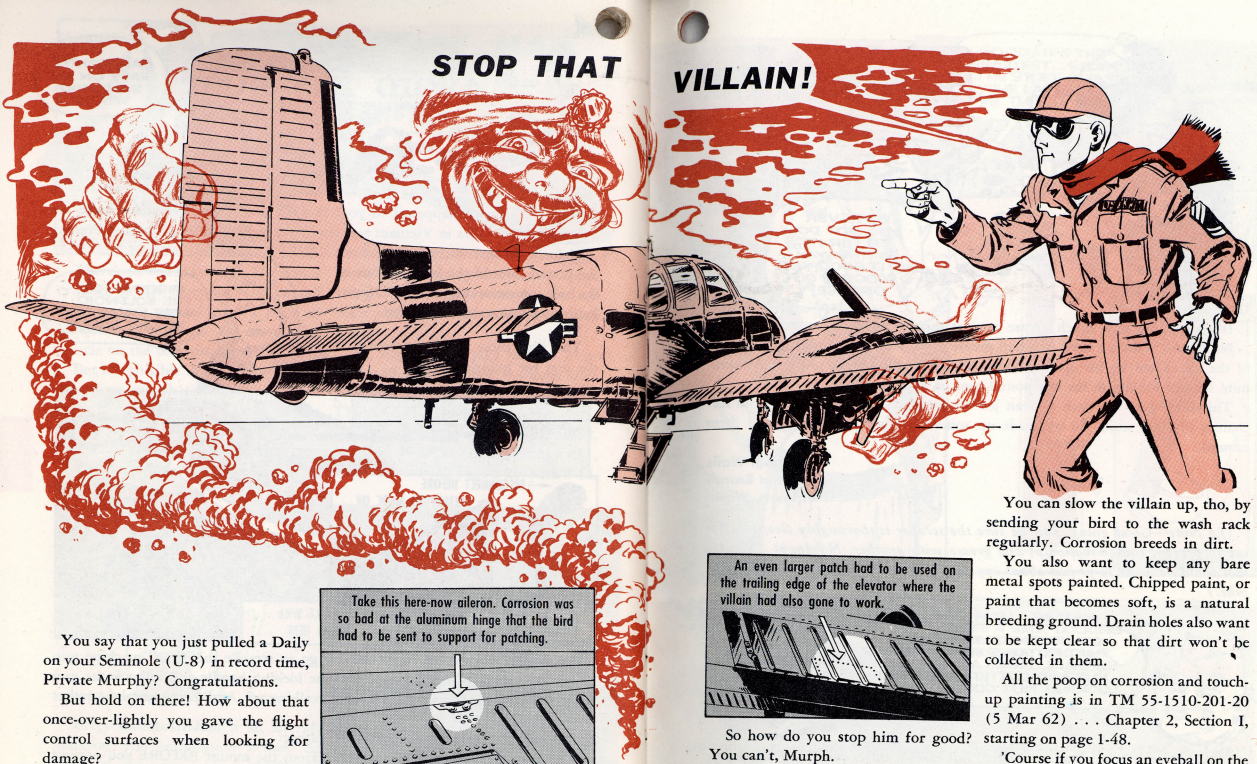
But hold on there! How about that once-over-lightly you gave the flight control surfaces when looking for damage?

The magnesium rudder, elevator and aileron are highly vulnerable to the corrosion villain, you know. He's the type you can't spot at a glance.



Take this here-now aileron. Corrosion was so bad at the aluminum hinge that the bird had to be sent to support for patching.

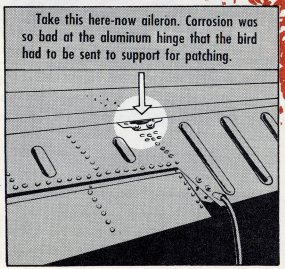
STOP THAT VILLAIN!



You say that you just pulled a Daily on your Seminole (U-8) in record time, Private Murphy? Congratulations.

But hold on there! How about that once-over-lightly you gave the flight control surfaces when looking for damage?

The magnesium rudder, elevator and aileron are highly vulnerable to the corrosion villain, you know. He's the type you can't spot at a glance.



Take this here-now aileron. Corrosion was so bad at the aluminum hinge that the bird had to be sent to support for patching.

An even larger patch had to be used on the trailing edge of the elevator where the villain had also gone to work.

So how do you stop him for good? You can't, Murph.

When unlike metals such as steel bolts, aluminum brackets and bare magnesium parts get together, you have a natural breeding ground for "galvanic" corrosion.

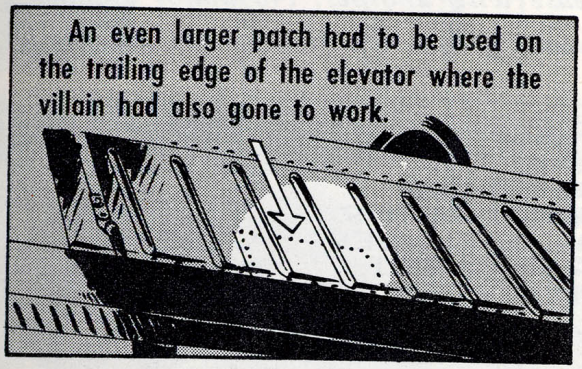
You can slow the villain up, tho, by sending your bird to the wash rack regularly. Corrosion breeds in dirt.

You also want to keep any bare metal spots painted. Chipped paint, or paint that becomes soft, is a natural breeding ground. Drain holes also want to be kept clear so that dirt won't be collected in them.

All the poop on corrosion and touch-up painting is in TM 55-1510-201-20 (5 Mar 62) . . . Chapter 2, Section I, starting on page 1-48.

'Course if you focus an eyeball on the control surfaces and you spot that scaly, powdery villain, you don't have much of a choice.

That's the ticket, Murph. Call the exterminator (your support).


An even larger patch had to be used on the trailing edge of the elevator where the villain had also gone to work.

So how do you stop him for good? You can't, Murph.

When unlike metals such as steel bolts, aluminum brackets and **bare** magnesium parts get together, you have a natural breeding ground for "galvanic" corrosion.

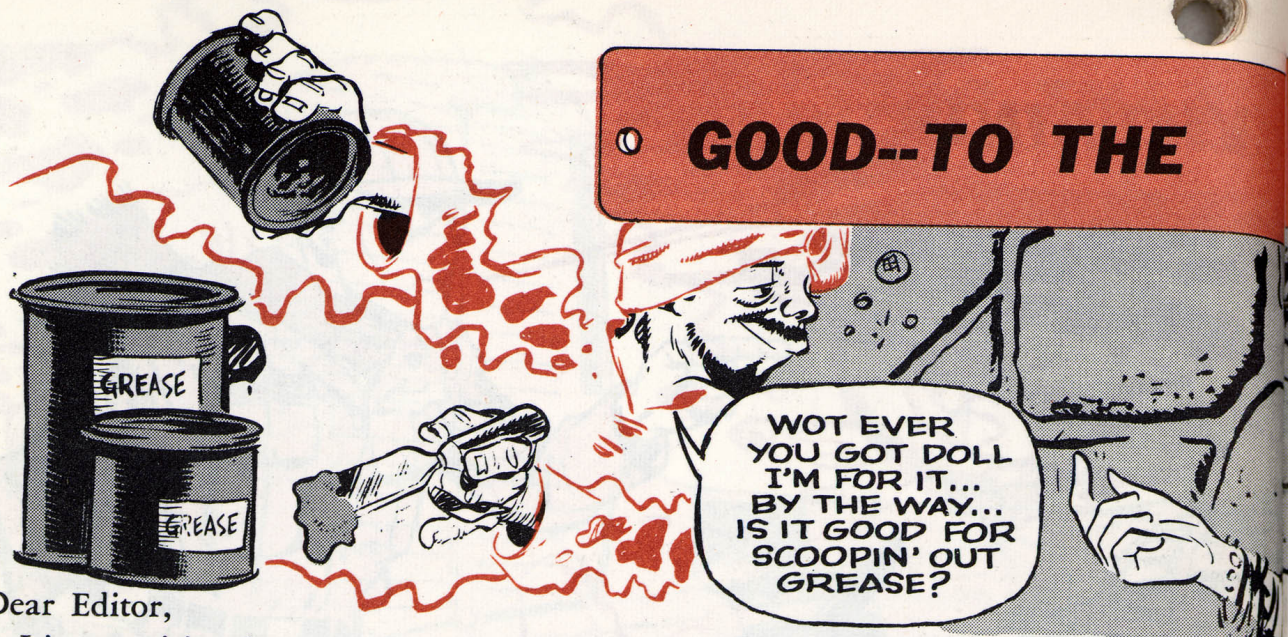
You can slow the villain up, tho, by sending your bird to the wash rack regularly. Corrosion breeds in dirt.

You also want to keep any bare metal spots painted. Chipped paint, or paint that becomes soft, is a natural breeding ground. Drain holes also want to be kept clear so that dirt won't be collected in them.

All the poop on corrosion and touch-up painting is in TM 55-1510-201-20 (5 Mar 62) . . . Chapter 2, Section I, starting on page 1-48.

'Course if you focus an eyeball on the control surfaces and you spot that scaly, powdery villain, you don't have much of a choice.

That's the ticket, Murph. Call the exterminator (your support).



GOOD--TO THE

Dear Editor,

It's surprising how much grease can get thrown away in "empty" cans.

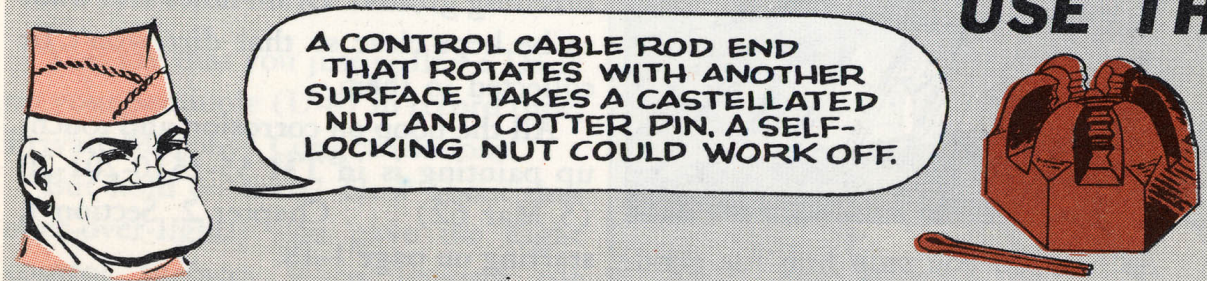
No matter what we used to scoop grease with, we never could get it all out of the can. Then we hit upon the idea of making this simple unpainted aluminum scraper for use in the one-pound cans of aircraft grease.

This little gem did such a clean job we soon had a demand for it from mechanics in other units. So we made up some more scrapers and passed them around.

William Walls
Air Maint Branch
Fort Lewis, Wash.

(Ed Note—Good going. Just be sure the scraper is thoroughly cleaned after use to prevent contamination of one grease with another. No doubt a similar tool could be made to fit just about any size grease can that comes across the pike!)

USE THE

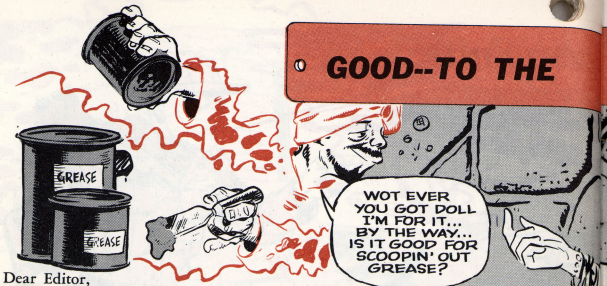


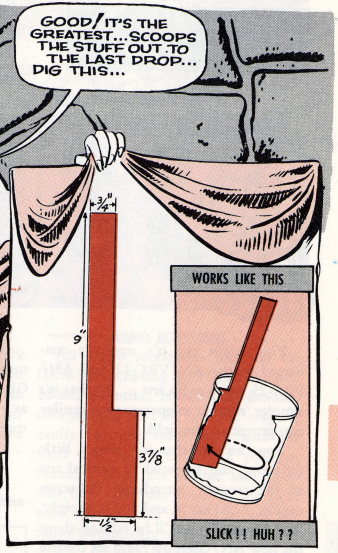
Most air-types know that a castellated nut takes a cotter pin. They also know that a self-locking nut doesn't take the place of a castellated nut. But not Private Murphy.

He's been spotted putting self-locking nuts on flight controls, where there ought to be castellated nuts and cotter pins.

You'd think he'd know, for example, a control cable rod end that rotates with

GOOD--TO THE LAST OUNCE





Dear Editor,

It's surprising how much grease can get thrown away in "empty" cans.

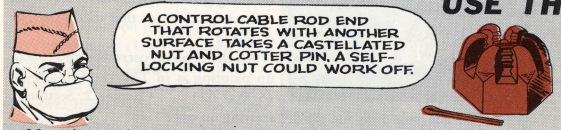
No matter what we used to scoop grease with, we never could get it all out of the can. Then we hit upon the idea of making this simple unpainted aluminum scraper for use in the one-pound cans of aircraft grease.

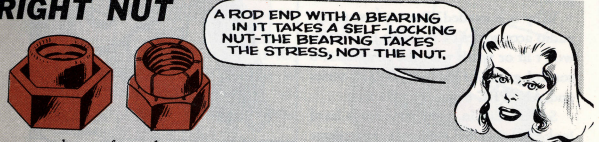
This little gem did such a clean job we soon had a demand for it from mechanics in other units. So we made up some more scrapers and passed them around.

William Walls
Air Maint Branch
Fort Lewis, Wash.

(Ed Note—Good going. Just be sure the scraper is thoroughly cleaned after use to prevent contamination of one grease with another. No doubt a similar tool could be made to fit just about any size grease can that comes across the pike!)

USE THE RIGHT NUT





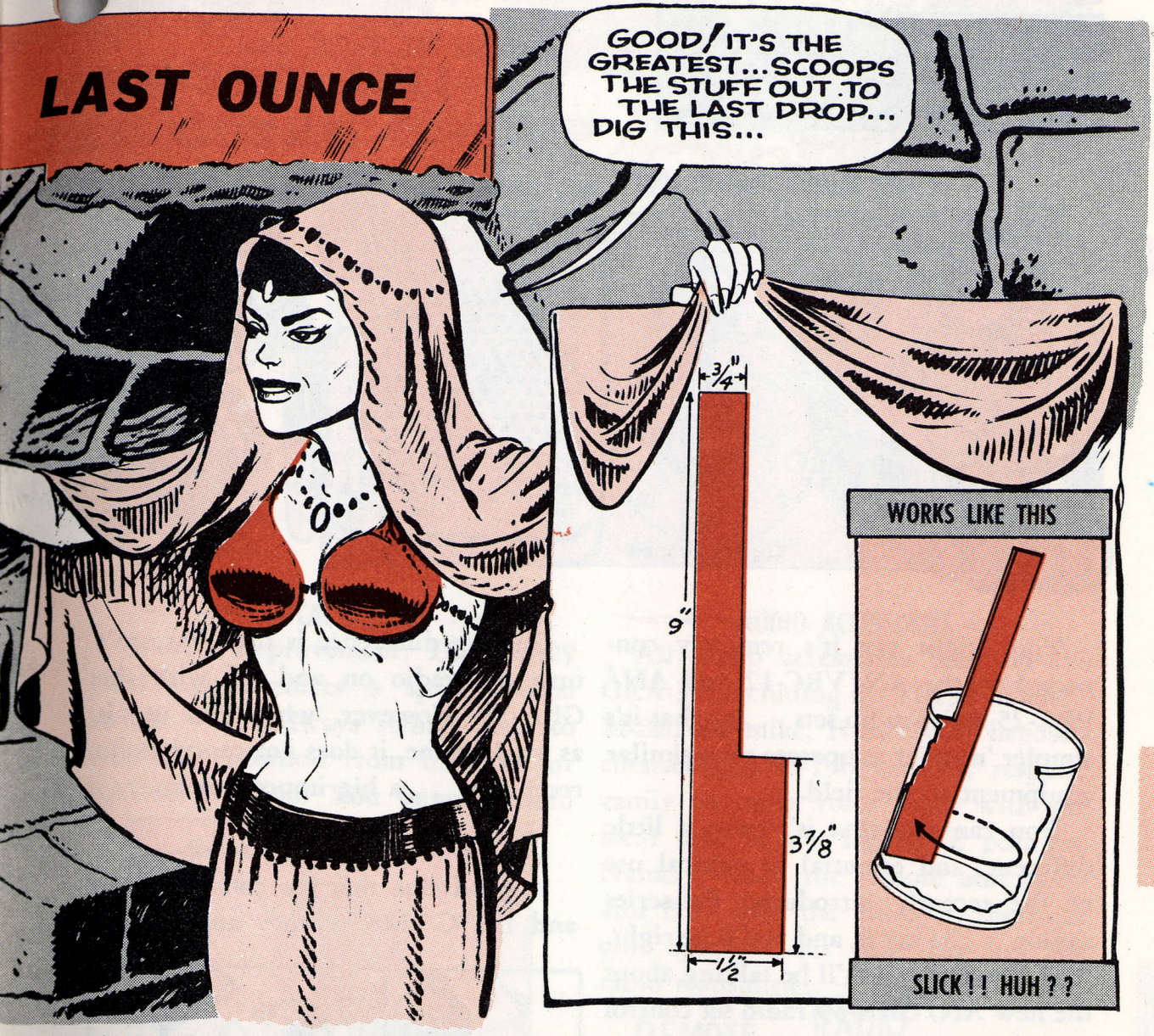
Most air-types know that a castellated nut takes a cotter pin. They also know that a self-locking nut doesn't take the place of a castellated nut. But not Private Murphy.

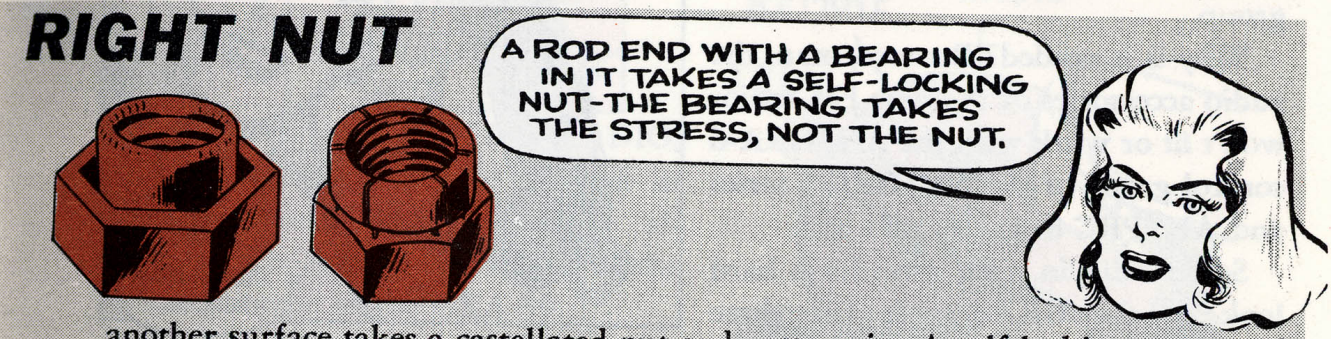
He's been spotted putting self-locking nuts on flight controls, where there ought to be castellated nuts and cotter pins.

You'd think he'd know, for example, a control cable rod end that rotates with another surface takes a castellated nut and cotter pin. A self-locking nut could work off.

He should also know that a rod end with a bearing in it takes a self-locking nut. That's because the bearing takes the stress—not the nut.

If you spot Murphy tell him to check his parts manual, will ya? That's the only way to tell which nut goes where.





another surface takes a castellated nut and cotter pin. A self-locking nut could work off.

He should also know that a rod end with a bearing in it takes a self-locking nut. That's because the bearing takes the stress—not the nut.

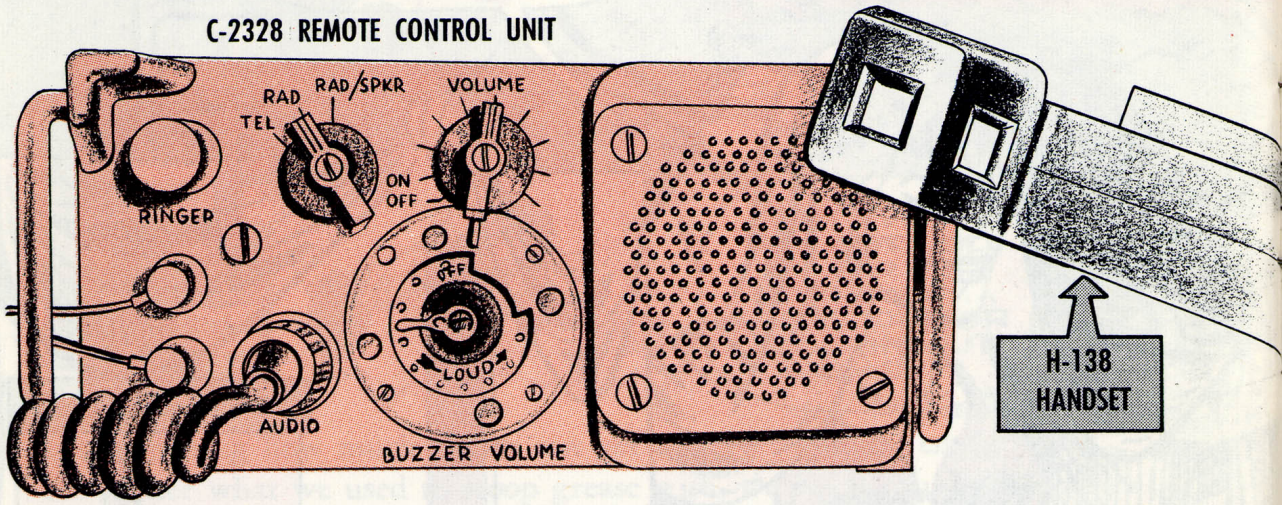
If you spot Murphy tell him to check his parts manual, will ya? That's the only way to tell which nut goes where.

COMMUNICATIONS

ANSWER THE 'PHONE, MAN . . .

IT'S THE NEW RADIO SET

C-2328 REMOTE CONTROL UNIT



You might say it's remotely connected to the AN/VRC-12 and AN/PRC-25 series radio sets . . . or that it's simpler 'n easier to operate than similar equipment in the field.

You can add that it's new, a little different, and essential in tactical use of the recently introduced FM-series radios. . . . So say it, and you'll be right. And, natcherly, you'll be talking about the new AN/GRA-39 radio set control group.

Why is it needed? Because, man, the audio accessories of the new FM radios won't fit or work with the AN/GRA-6 control group of the AN/GRC-3 series and AN/PRC-8 series radio sets.

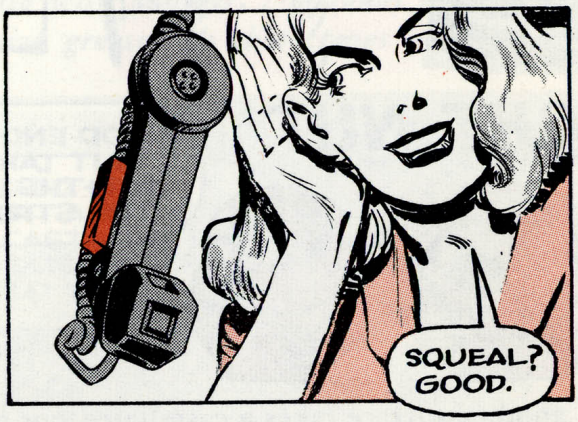
So let's dig in right now for a hard look at the GRA-39. It has three purposes:

1. Telephone between local and remote unit operators.
2. Local radio operation via a flick of a switch.
3. Remote radio operation.

One big difference is that you can't turn the radio on and off with the GRA-39. However, when you use it as a telephone, it does not cancel radio reception . . . a big improvement.

REMOTE UNIT

A good clue that the control group and the C-2328 remote unit are in

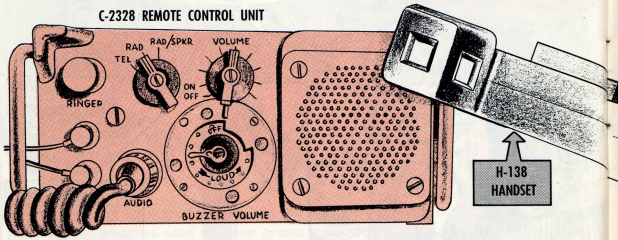


working order, or that the batteries are in good shape, is: Press the P-T-T switch of the H-138/U handset and listen. If you get a high-pitched squeal, you're in business.

ANSWER THE 'PHONE, MAN . . .

IT'S THE NEW RADIO SET

C-2328 REMOTE CONTROL UNIT



You might say it's remotely connected to the AN/VRC-12 and AN/PRC-25 series radio sets . . . or that it's simpler 'n easier to operate than similar equipment in the field.

You can add that it's new, a little different, and essential in tactical use of the recently introduced FM-series radios. . . . So say it, and you'll be right. And, natcherly, you'll be talking about the new AN/GRA-39 radio set control group.

Why is it needed? Because, man, the audio accessories of the new FM radios won't fit or work with the AN/GRA-6 control group of the AN/GRC-3 series and AN/PRC-8 series radio sets.

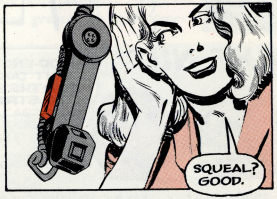
So let's dig in right now for a hard look at the GRA-39. It has three purposes:

1. Telephone between local and remote unit operators.
2. Local radio operation via a flick of a switch.
3. Remote radio operation.

One big difference is that you can't turn the radio on and off with the GRA-39. However, when you use it as a telephone, it does not cancel radio reception . . . a big improvement.

REMOTE UNIT

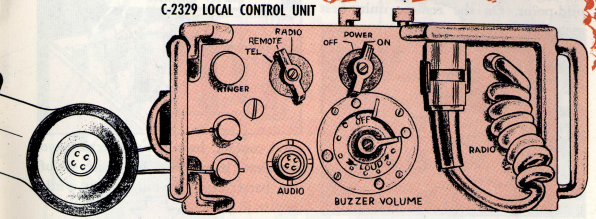
A good clue that the control group and the C-2328 remote unit are in



working order, or that the batteries are in good shape, is: Press the P-T-T switch of the H-138/U handset and listen. If you get a high-pitched squeal, you're in business.

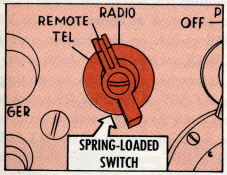
AN/GRA-39 CONTROL GROUP

C-2329 LOCAL CONTROL UNIT



LOCAL UNIT

Another improvement: The C-2329 local unit features a spring-loaded switch which always swings back to REMOTE position from the TEL or RADIO position. You have to hold

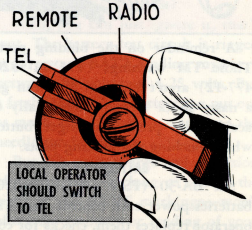


the switch in place on TEL or RADIO, and you can't go off and leave it in those positions. Which, naturally, always assures remote operation . . . the prime purpose of the GRA-39.

Just don't put the muscle to the switch, though. You can break it or break a catch . . . and that ain't good. Give it enough pressure to take it to the white line of the TEL or RADIO position, and hold it on the line. Period.

AUDIO ACCESSORIES

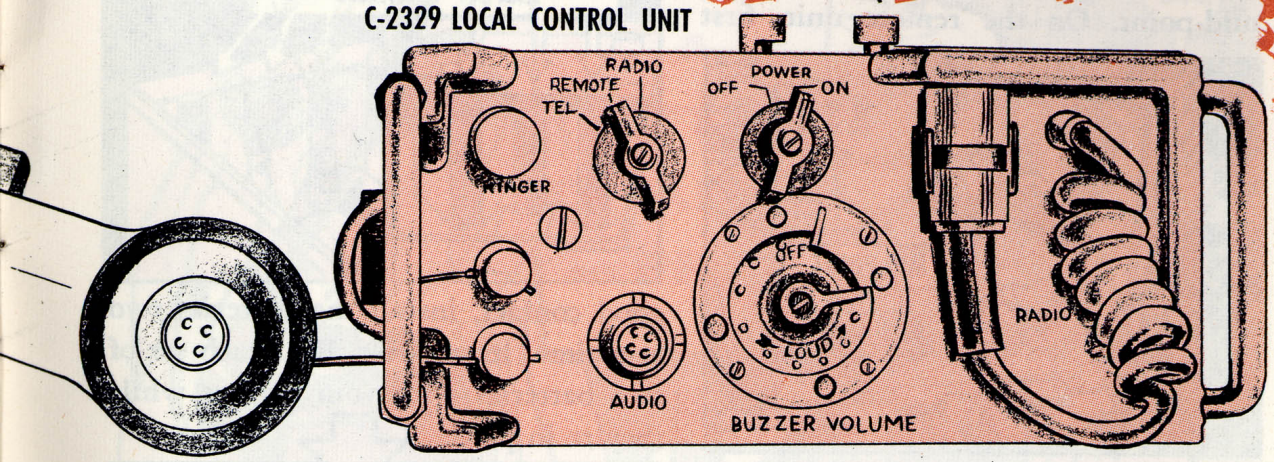
All audio accessories used on the GRA-39, including the H-138 handset, M-80/GR mike, H-141/GR headset-chestset and H-140 headset, respond zanily to some voice tones with the local unit in the REMOTE position. Namely, when the remote unit operator talks over the phone to the local unit operator, his voice can key the radio transmitter.



To avoid this, the local operator should switch to the TEL position when he's buzzed by the remote operator.

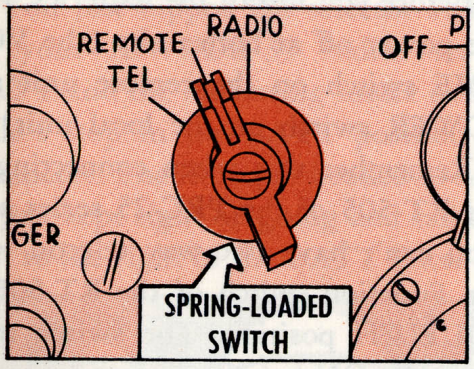
MORE

AN/GRA-39 CONTROL GROUP



LOCAL UNIT

Another improvement: The C-2329 local unit features a spring-loaded switch which always swings back to REMOTE position from the TEL or RADIO position. You have to hold

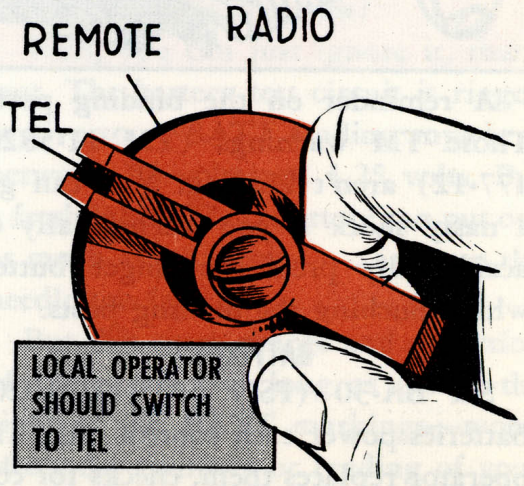


the switch in place on TEL or RADIO, and you can't go off and leave it in those positions. Which, naturally, always assures remote operation . . . the prime purpose of the GRA-39.

Just don't put the muscle to the switch, though. You can break it or break a catch . . . and that ain't good. Give it enough pressure to take it to the white line of the TEL or RADIO position, and hold it on the line. Period.

AUDIO ACCESSORIES

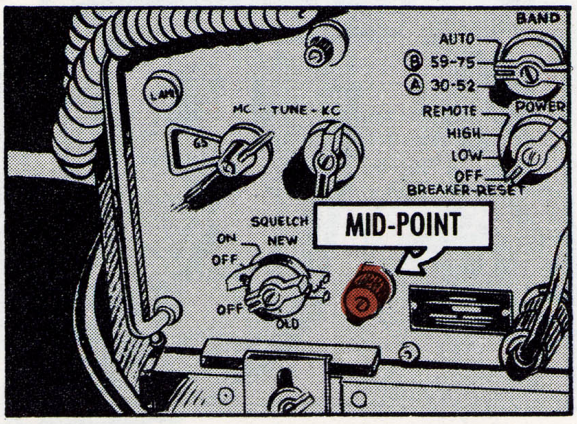
All audio accessories used on the GRA-39, including the H-138 handset, M-80/GR mike, H-141/GR headset-chestset and H-140 headset, respond zanily to some voice tones with the local unit in the REMOTE position. Namely, when the remote unit operator talks over the phone to the local unit operator, his voice can key the radio transmitter.



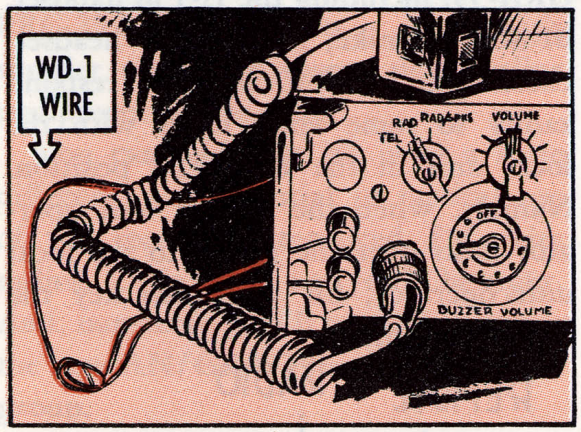
To avoid this, the local operator should switch to the TEL position when he's buzzed by the remote operator.

P.S. MORE

Too high a volume also can key the set. So-o-o, when connecting the local unit to the radio, turn the radio set's RT volume control no higher than mid-point. On the remote unit, first



connect the WD-1 wire to the unit's binding posts, and then turn the unit's volume switch to about mid-point.

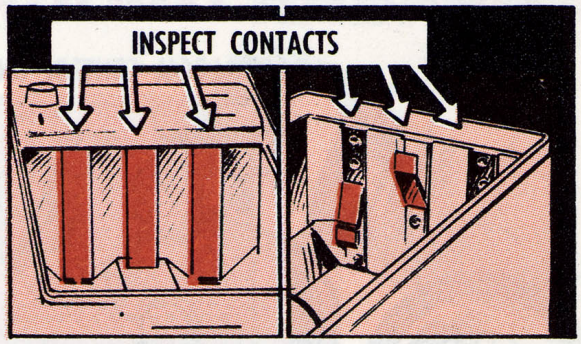


A reminder on the binding posts. Those TM warnings (TM 11-5820-477-12) aren't kidding. You can get a nasty shock if you intentionally or accidentally press the ringer button while touching the binding posts.

BATTERIES

Six BA-30 (FSN 6135-120-1020) batteries power each control unit. The operator replaces them, checks for corrosion and leakage, and removes them when the control group's not in use to avoid damage to the cases.

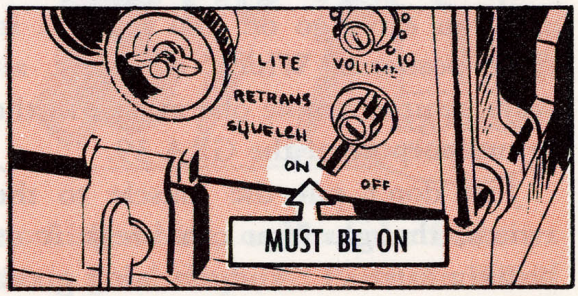
Inspect the contacts for tarnish, remove film or dirt with a rubber eraser if you find it, and, to further insure



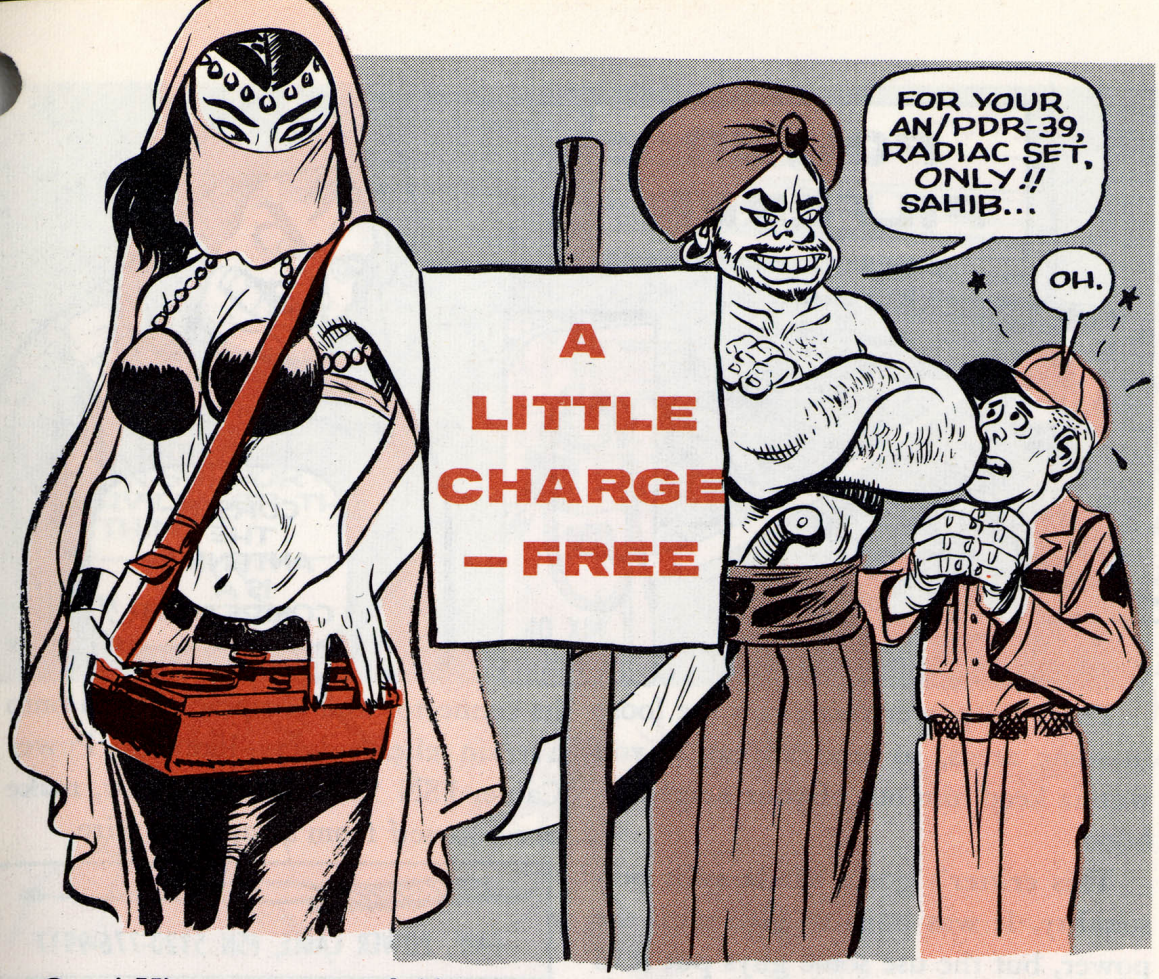
good contact, install the batteries two at a time, lengthwise. Roll each set of two batteries with your fingers while they're in place.

Before you install the batteries, turn the power off at both units (the VOLUME switch on the remote unit and POWER switch on the local unit).

Remember this when connecting to the RT-505 of the PRC-25 series sets: You can't have two-way telecon with the Function switch of the RT-505 in SQUELCH position. The switch must be in the ON position.

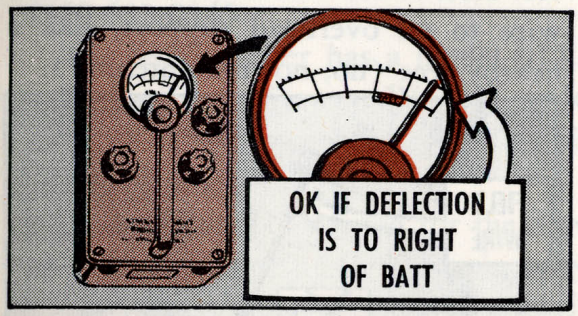


And, finally, Joe, keep your eyeballs peeled for more stuff on the GRA-39 in upcoming issues of PS.



Oops! H'mmmm . . . and Ah, So!

You just flipped the selector switch on your AN/PDR-39 radiac set to BATT and the indicating meter needle didn't stop in the BATT position on the meter. The little pin-headed so-and-so just kept right on going and came to rest to the right of the BATT lines.

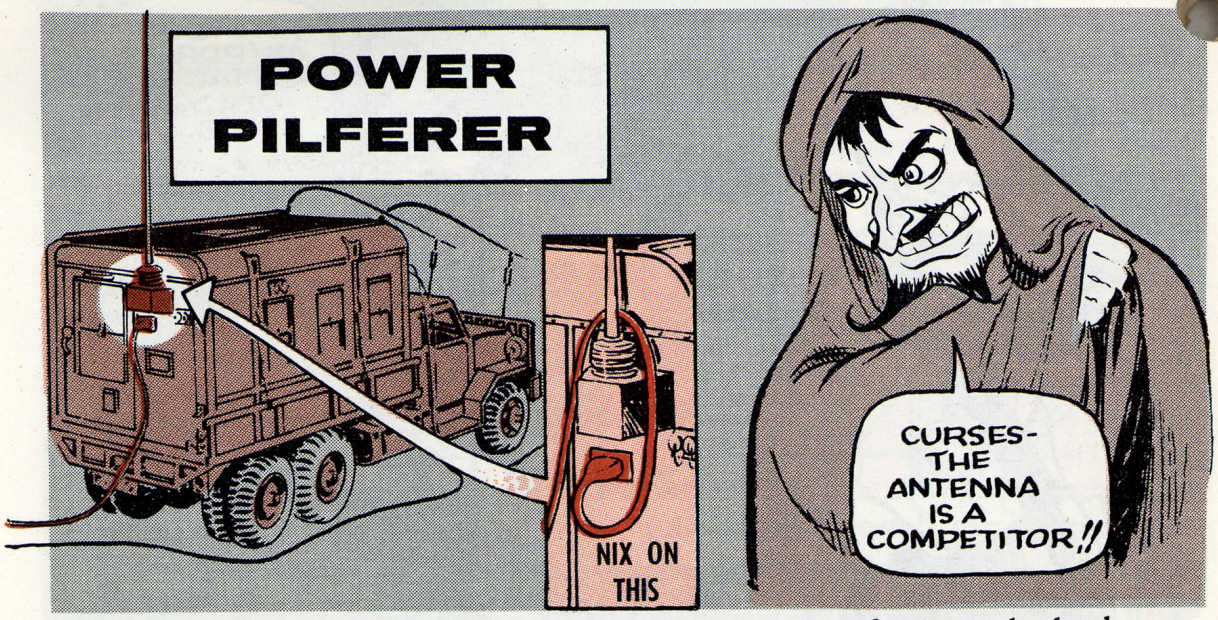


So you're thinking maybe this is not so good since TM 11-5514A (Jul 56) says the needle should remain on the BATT position when you're testing the battery. And when it comes to detecting those ol' Gamma rays you just can't be too careful about the way your radiac set is primed to do the job.

You know that if the needle won't go up to BATT then you've got to replace the battery. But what's the score when the needle goes past?

Well, you can just ignore it, that's wot. The battery test circuit is rigged to give you a BATT reading anywhere between .93 volts and 1.25 volts. But a fresh BA-1277/U battery can put out as much as 1.35 volts . . . and run the needle too far right.

But this extra charge and deflection of the needle—as long as it's to the right of the BATT markings—won't affect the accuracy or reading of your radiac set. So don't sweat it. After all, it's not too often you get a little extra charge for free.



There's a power stealer on the loose in some areas, so lend an ear if you wanna keep him out of your neighborhood.

This critter's got a kinda split personality. It was built to give with the power, but the use some guys put it to makes it a high order power pilferer.

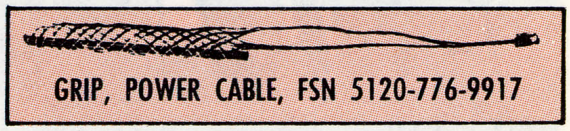
So poke your nose out of the home of your AN/GRC-26D radio set; focus on the transmitting antenna, and hang on. If the power cable (CX-1165/U or CX-6485/U, depending on the switch or junction box) is looped around the antenna and insulator, you've been visited by the crook. You may have even aided and abetted.

If the antenna is unobstructed, here's how you keep the power stealer away:

DON'T WRAP OR HANG THE POWER CABLE ON OR AROUND THE ANTENNA.

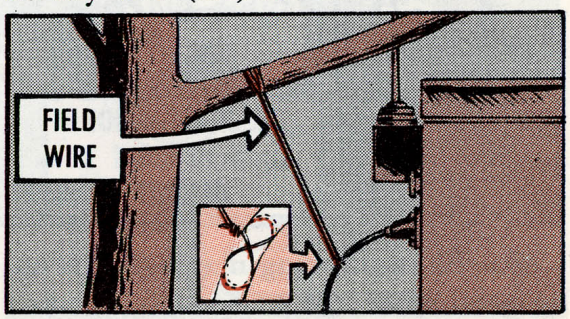
Using the antenna for a hanger pilfers power pronto. It steals power from the antenna on just about every frequency. On some frequencies, you can't load the antenna atall.

So-o-o-o, if the strain of the hanging power cable appears to be damaging its connector and receptacle, latch onto a strain relief gadget—like Grip, Power Cable, FSN 5120-776-9917. Or, make one yourself from scrap field wire.



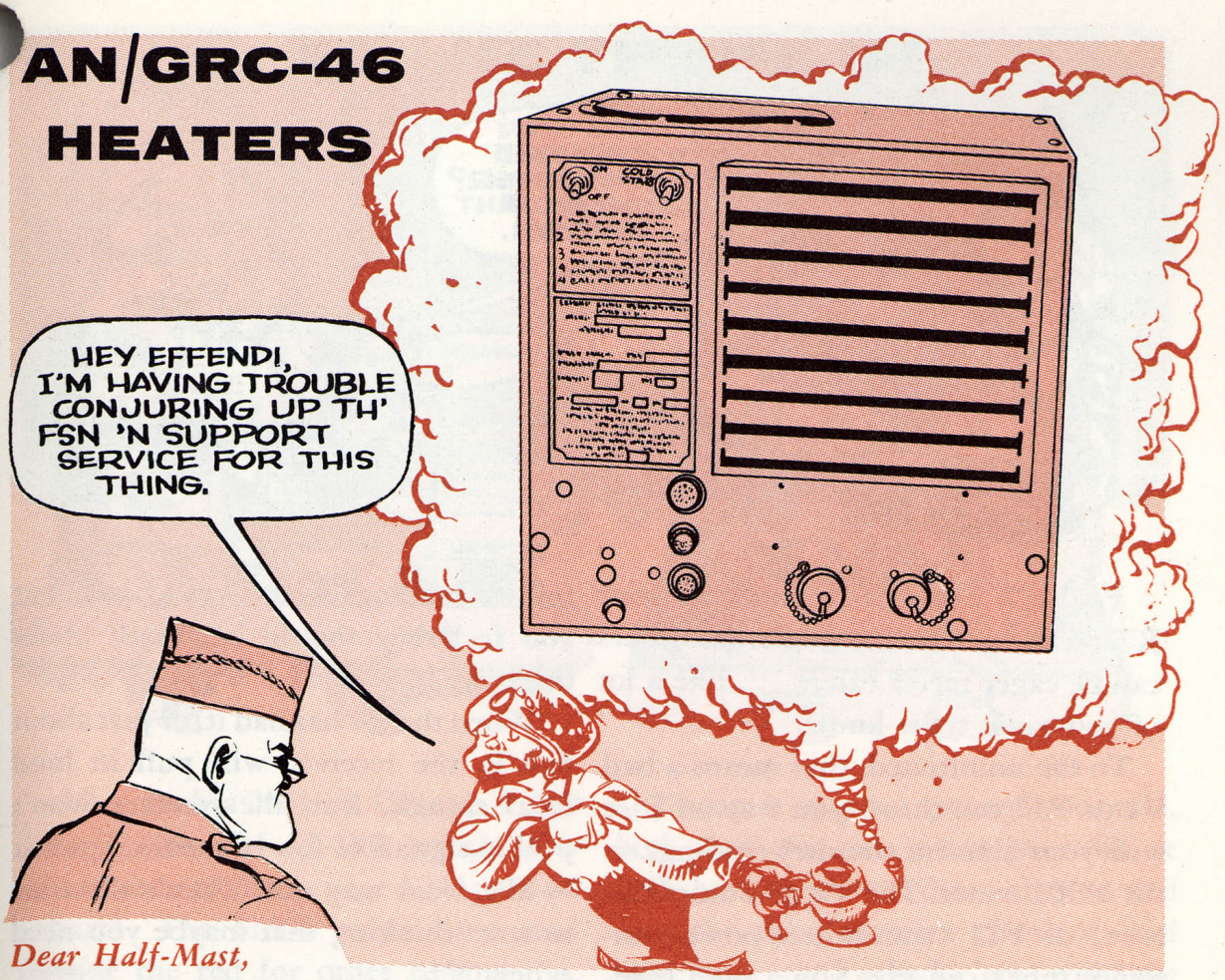
The field wire fix is a neat trick which can be used on power cables besides those used with the Angry-26.

Like, loop the end of the wire into a figure 8. Secure the end. Feed the cable through the ovals of the 8 'til you get about a foot or so from the connector. Attach the other end of the field wire to an overhead support, like a nearby tree (no, not the antenna!).



Presto! You've taken care of the cable, and the antenna does a no-sweat job.

AN/GRC-46 HEATERS



Dear Half-Mast,

We're having a bit of trouble trying to locate the FSN and responsible support service for the heaters mounted in the AN/GRC-46 radio-teletypewriter sets. The heaters we have are Stewart Warner. What's the dope on these?

Sgt N. T. H.

Dear Sergeant N. T. H.,

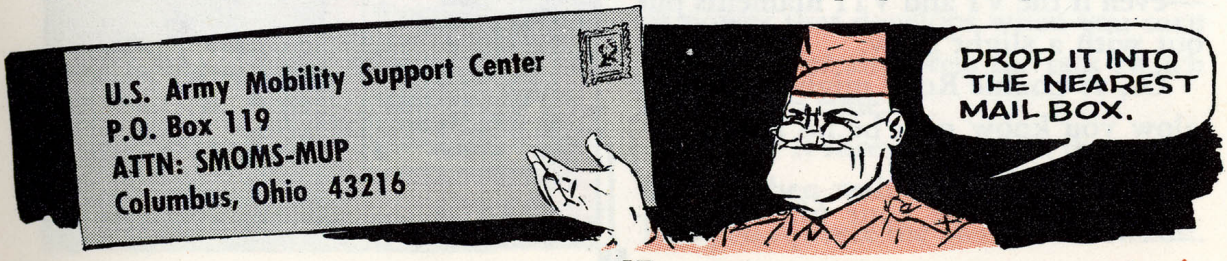
It turns out there're two Stewart Warner heaters being used in these shelters.

The S-144 or lightweight shelter has a model 01X202757 heater, with FSN 4520-633-0345.

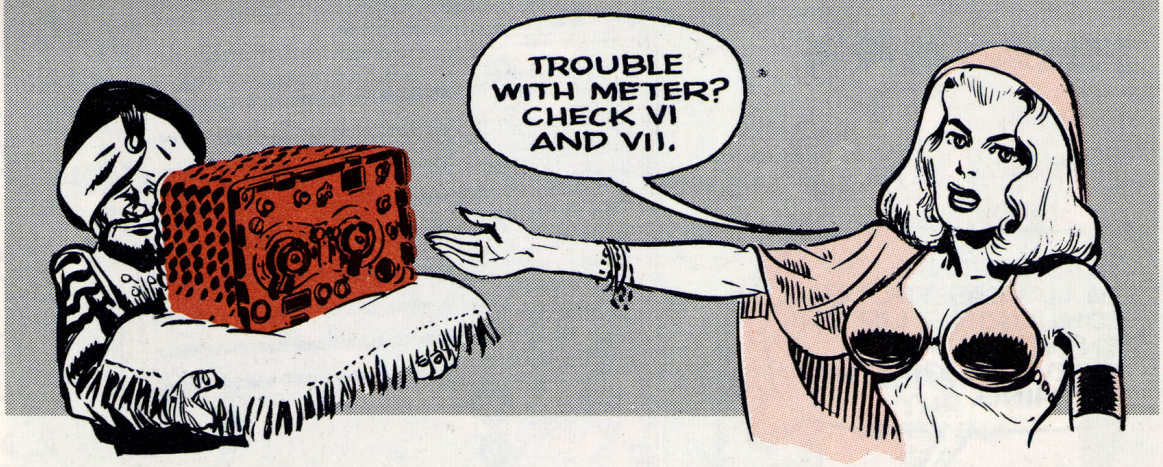
The S89C shelter has a model 01X204966 heater, with FSN 4520-690-2956.

Both of these Stewart Warner models, as well as the Hunter model found in some units, are Engineer items. The Hunter model is covered in TM 5-4520-206-15 (Jul 61).

There're no TM's listed for the Stewart Warners, but you can have your support unit submit a 1546 requesting any commercial-type pubs and parts lists to:



FILAMENT FILL-IN



Faulty V1 and V11 tubes in your RT-66 thru -68 receiver-transmitters can be eager meter eaters . . . like a lot of you radio types know.

To the uninitiated, that means a bad V1 or V11 can throw you way off base with your filament circuitry readings on the M301 meter. The V1 (RF amplifier tube) or V11 (transmitter power amplifier tube) can give you a high reading for all filaments (which is what you don't want).

Most radio mechanics also know that you check the V1 and V11 with an eyeball inspection, as per TM 11-289. If the tube filaments light, then you assume the tubes are good.

But—and even you guys in the know may not know this—there's another way to check and suspect the V1, and even a third way . . . which gets both the V1 and V11. If certain symptoms show here, it's time to think about new tubes —even if the V1 and V11 filaments put out with a slight glow.

Or, as Connie Rodd might say, "The glow you know may be no go."

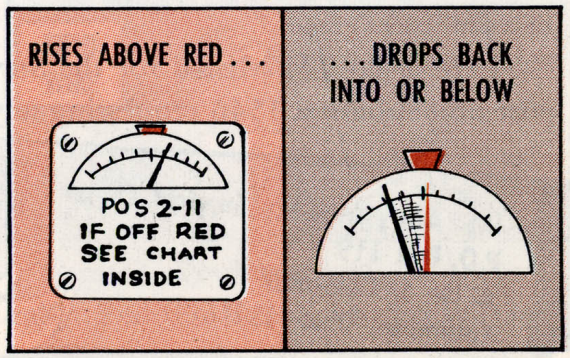
Interested?

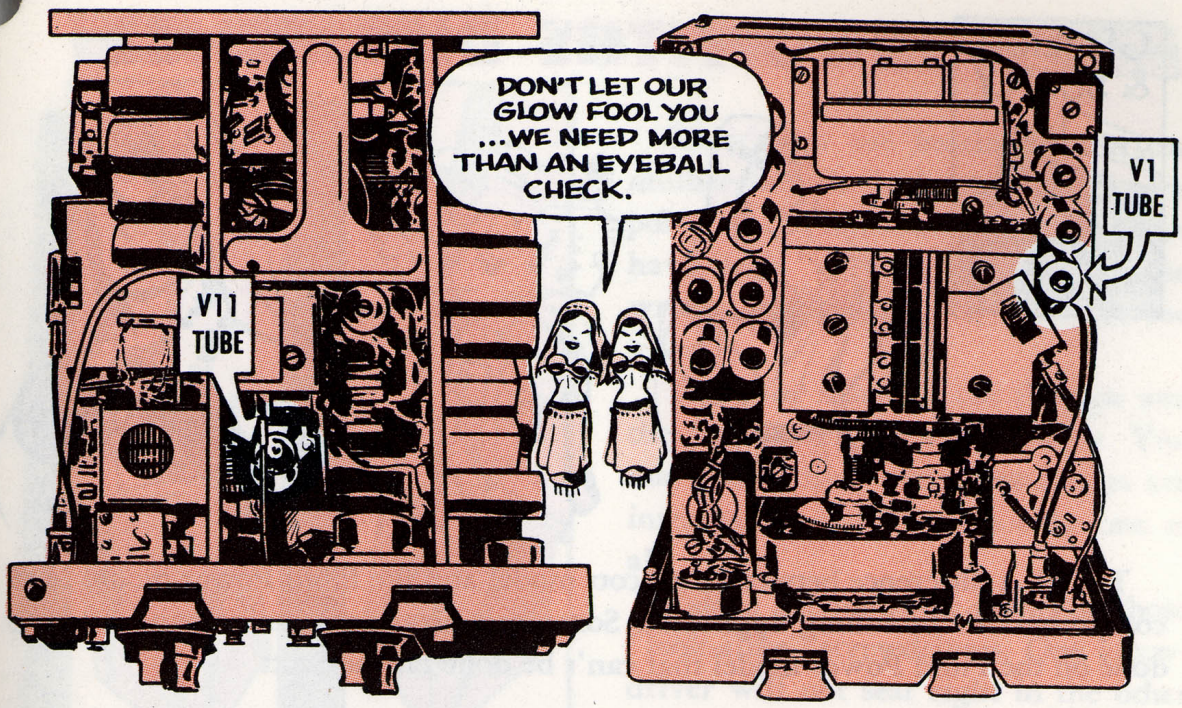
OK. Next time your filament continuity readings aren't up to par, but you feel they should be, think about this:

When the V1 has had it, or just about had it, the receiver will pull in loud local signals. But, the receiver won't pull in signals of low or medium power —like from way out. Then's the time to start thinking that maybe you need a new V1.

Here's a clue that applies equally to the V1 and the V11:

Suspect they are gone or going when the panel meter (M301) needle rises slightly above the red on the meter, and, in a coupla' seconds, drops back into or below the red. This'll happen when you're checking the transmitter filament positions (Pos. 2-6 on the S301 switch).



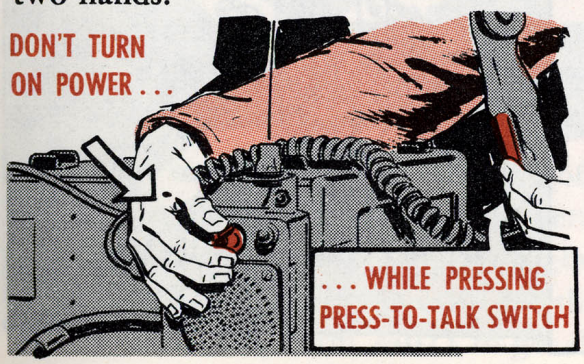


Also, grab a look at Change 4 (29 Mar 57) to TM 11-289, which adds an important note to page 124, para 60 (chart). The M301 meter may read outside the red for other reasons. So, check tubes by substitution before you dispose of them.

To sum it up, your eyes and your ears, both, can clue you when your V1 or V11 have gotta go. Since they're tied into the tube filament circuitry, and since you can't check 'em with the M301, use your eyes and ears to keep the tubes from playing tricks on the meter.

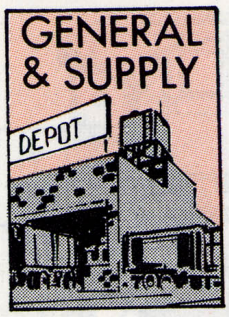
DON'T DO IT

Turning your AN/VRC-19 series radio set power on and pressing the press-to-talk switch on the handset at the same time is easy to do if you have two hands.

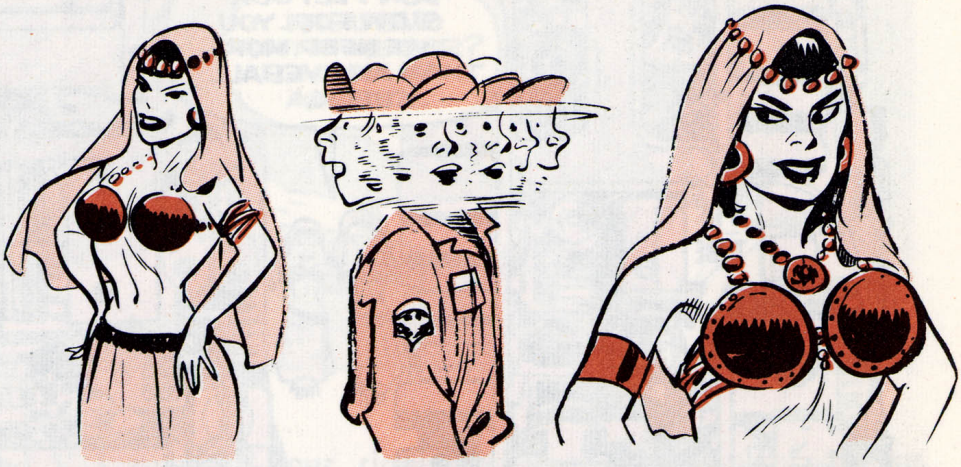


But if the old gray stuff in your skull is chugging away on all eight, it's something you don't want to do. You don't want to, that is, unless you're looking for a fast way to burn out filaments and blow fuses. The filaments and fuses just can't take the sudden surge of power that develops when you turn on the power and press the talk switch at the same time.

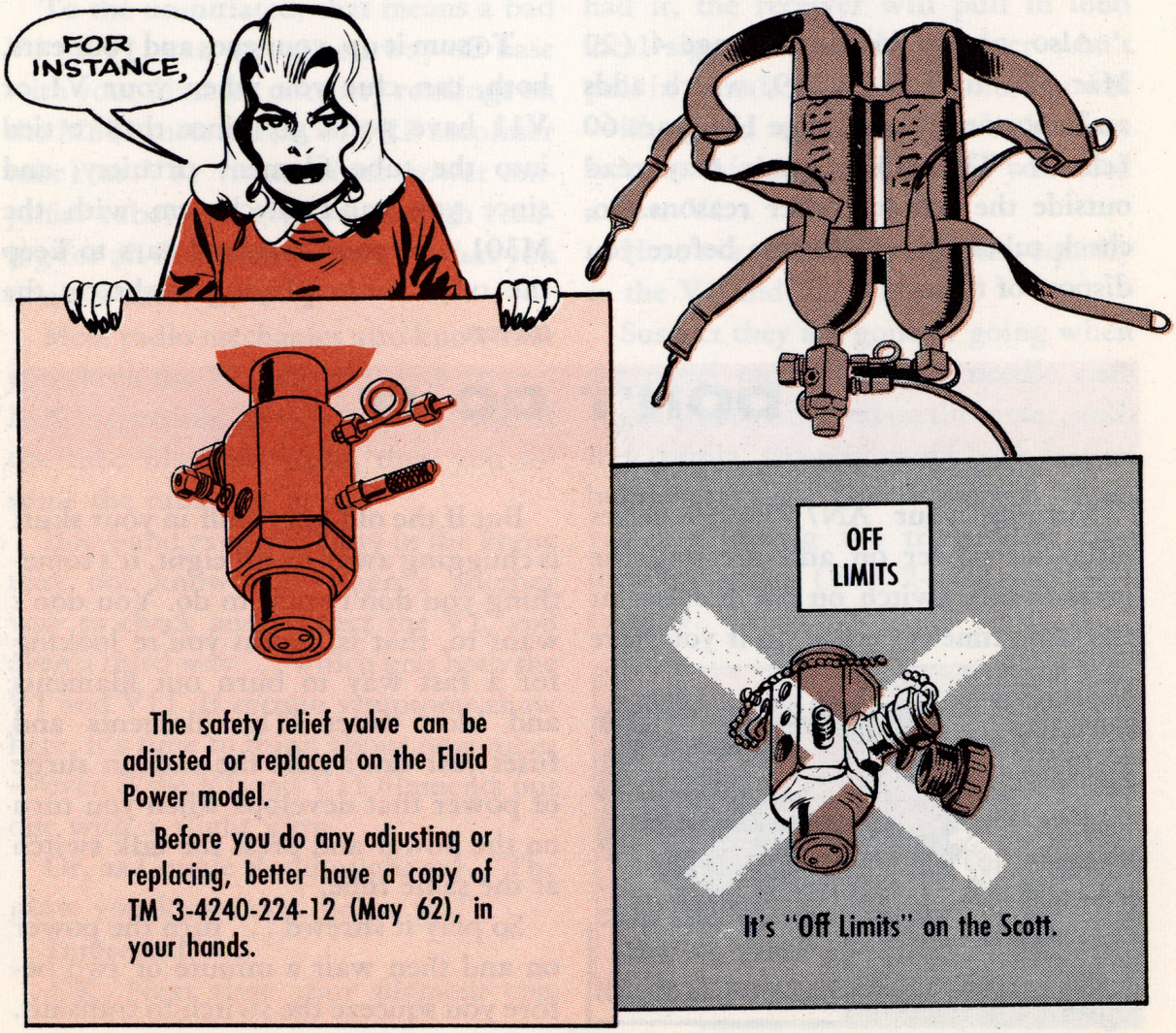
So play it shrewd . . . turn the power on and then wait a minute or two before you squeeze the switch to transmit.



KNOW THE DIFFERENCE



There's a difference between the Scott model and the Fluid Power model M15 compressed air breathing apparatus. Some organizational maintenance can be done on the Fluid Power model that can't be done on the Scott.



The safety relief valve can be adjusted or replaced on the Fluid Power model.

Before you do any adjusting or replacing, better have a copy of TM 3-4240-224-12 (May 62), in your hands.

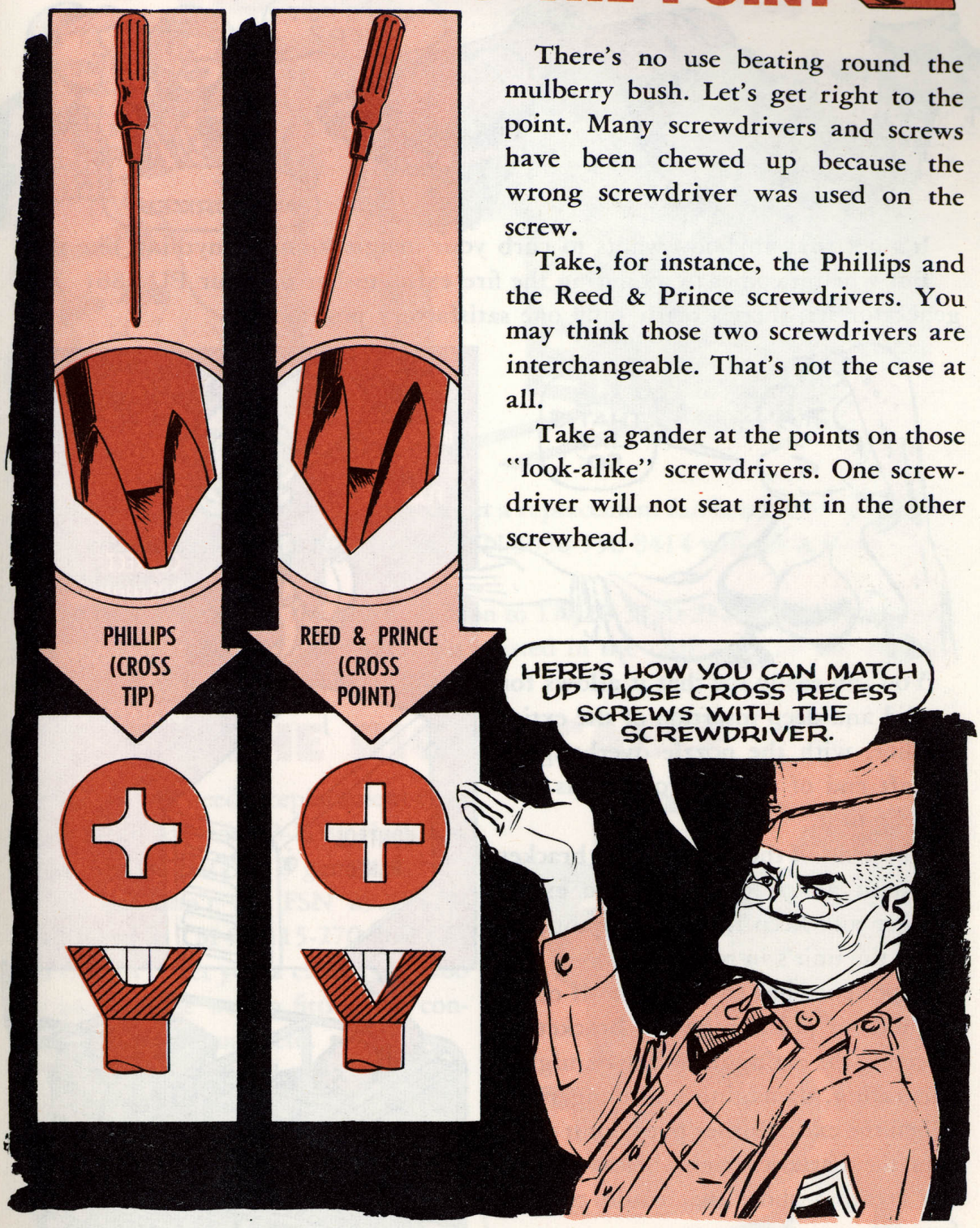
It's "Off Limits" on the Scott.

GETTING TO THE POINT

There's no use beating round the mulberry bush. Let's get right to the point. Many screwdrivers and screws have been chewed up because the wrong screwdriver was used on the screw.

Take, for instance, the Phillips and the Reed & Prince screwdrivers. You may think those two screwdrivers are interchangeable. That's not the case at all.

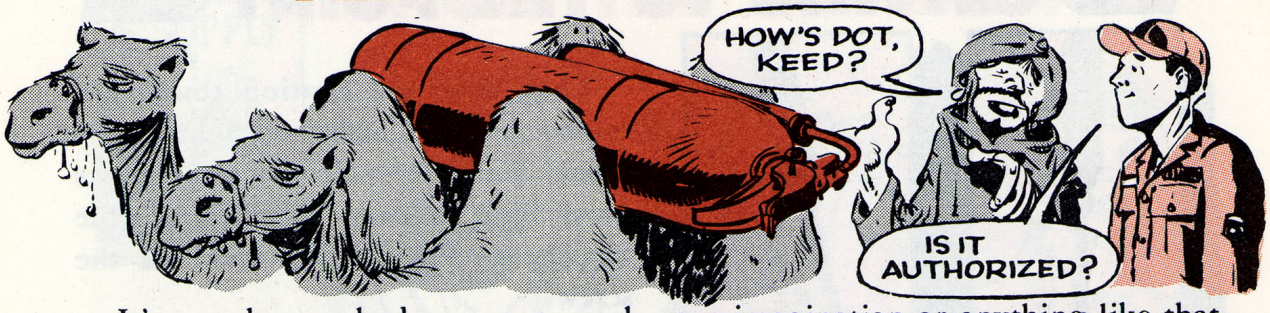
Take a gander at the points on those "look-alike" screwdrivers. One screwdriver will not seat right in the other screwhead.



If your tool kit calls for one kind of screwdriver and you've been issued the other, see your supply man about getting the right one. Give it the big eyeball when it arrives to make sure it's right.

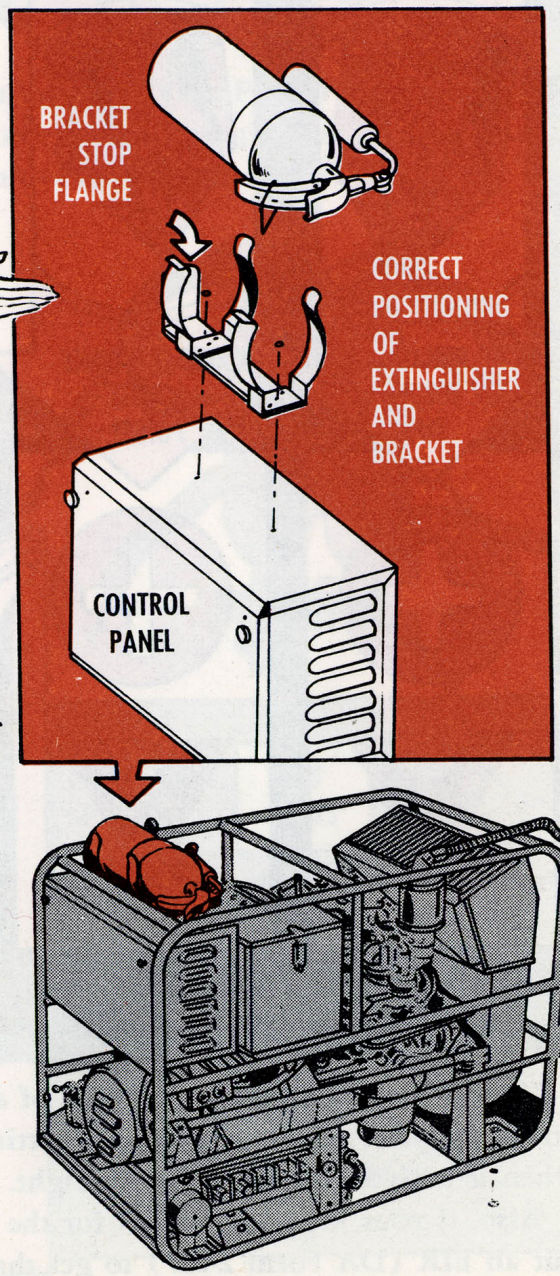
Also, if your kit does not call for the types or amount of tools you need, fill out an EIR (DA Form 2407) to get that kit set up like it ought to be.

FIRM IN THE SADDLE



It's not that anybody wants to curb your imagination or anything like that.

But when it comes to mounting the fire extinguisher on your PU-286( )/G generator set, there's really only one satisfactory position.



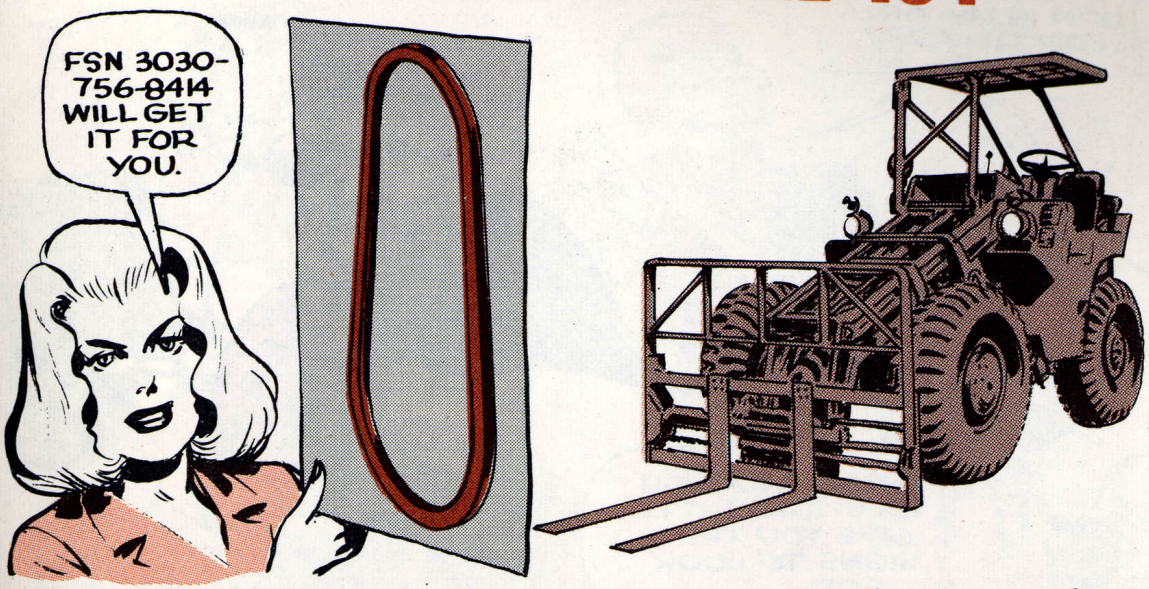
You can easily see that it allows for a solid and deep insertion of the extinguisher, with the nozzle overhanging the aft end of the control box as you face up to it.

The arms of the extinguisher bracket maintain a firm grasp on the extinguisher and keep it from popping out when the unit's in motion.

Experience has shown that all other methods of positioning the bracket or inserting the extinguisher can be mighty frustrating, damaging and dangerous. When the extinguisher pops out it clobbers the batteries right below it and can create a short that could cause a fire.

If the extinguisher bracket on your set is mounted with the stop flange to the right as you face the control panel, take it off and turn it around.

V-BELTS FOR MHE 164



Bothered and bewildered trying to get a replacement fan belt for your 6000-lb Baker rough terrain forklift? Relax. FSN 3030-756-8414 will get it for you. It's an Engineer-type item.

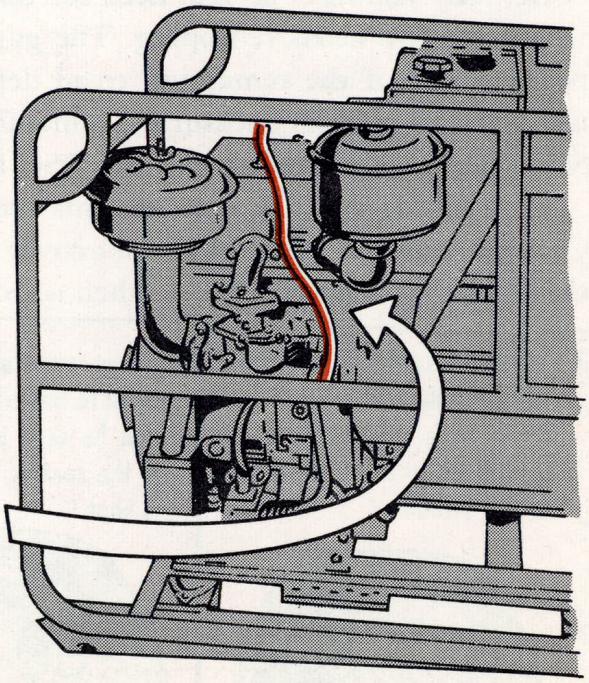
The new V-belt is in the latest revision to TM 10-3930-212-35P (Jun 63) and TM 10-3930-212-20P (Apr 63), but it's listed in the -20P only by the military standard number (96906) MS51066-50.

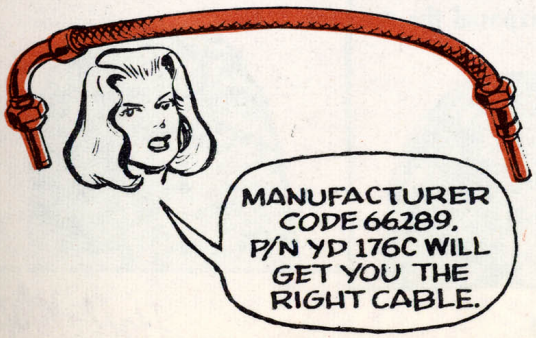
THE RIGHT CABLE

You say you need a replacement electrical cable for your 3-KW Hollingsworth Model JHGW3B generator?

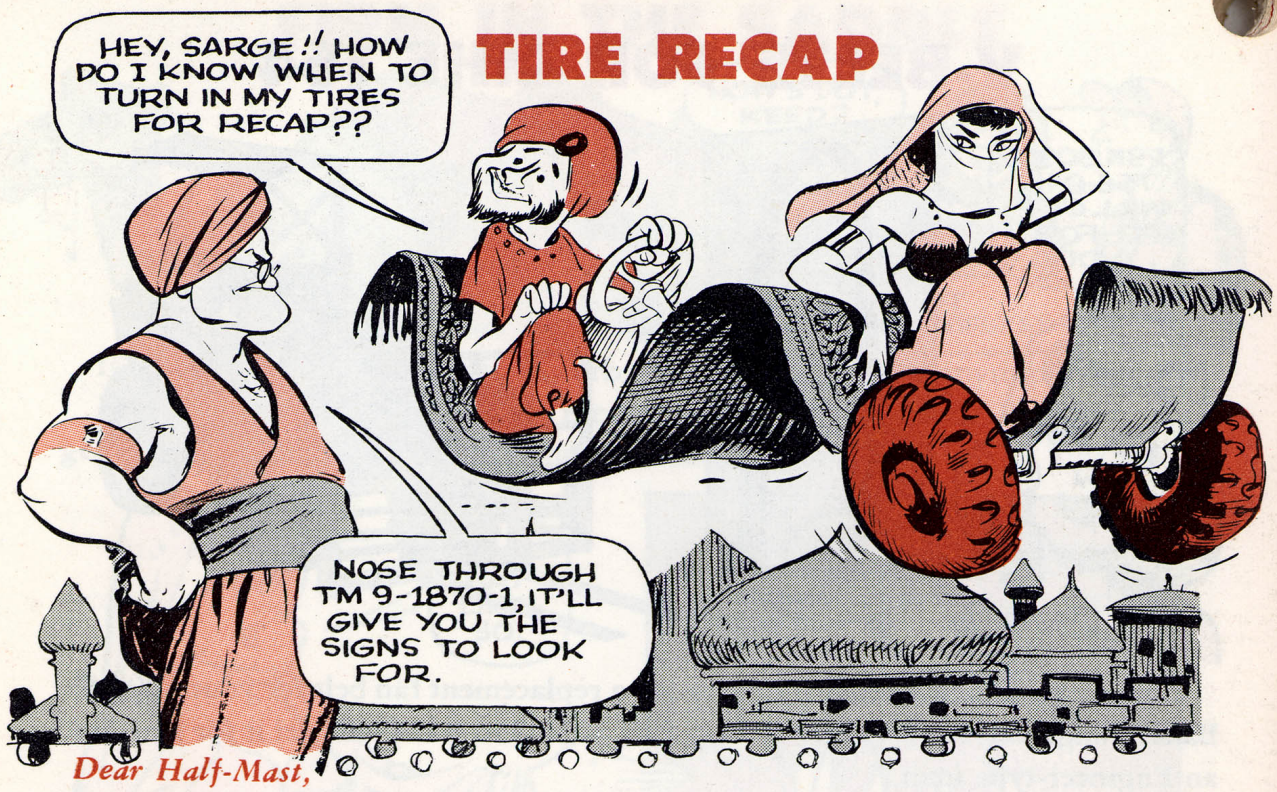
OK, but don't use FSN 2920-371-4620 listed in TM 5-6115-270-20P (28 Jun 61). It'll get you a cable that's too big and has the wrong fitting for connecting into the magneto.

The same goes for the cable listed in TM 5-6115-200-20P (12 May 60) on the Hollingsworth Model JHGW3A.





TIRE RECAP



Dear Half-Mast,

In our Automotive Set No. 2 Common Tool Kit we have a tire tread depth gage (FSN 5210-357-5951). Can you tell us how we're to use this gage to tell when a tire needs recapping?

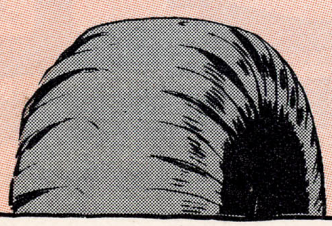
SSgt J. B. B.

Dear Sergeant J. B. B.,

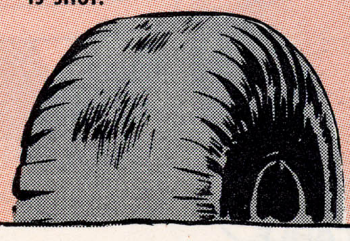
Actually you have no real need for that tire tread depth gage when deciding whether a tire needs recapping. The gage is usually used by depot and support people to see if the remaining tread depth on tires is enough to allow issue to using outfits and for measuring remaining tire tread when making Equipment Serviceability Criteria checks. See ESC list in DA Circular 750-11 (5 Aug 63).

Your guide for tire care and maintenance is TM 9-1870-1 (Feb 55) with Changes 1 and 2. The TM doesn't cover the use of the depth gage . . . but here're the signs that'll let you know when a recap is needed:

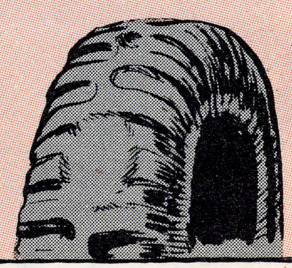
1. When the center of the tire is worn evenly and smooth, and the tread is only visible at the tire edges — and before any cord is visible.



2. When the tire has irregular wear to the extent that the cord can be seen in any one spot. If the cord is exposed the tire is shot.

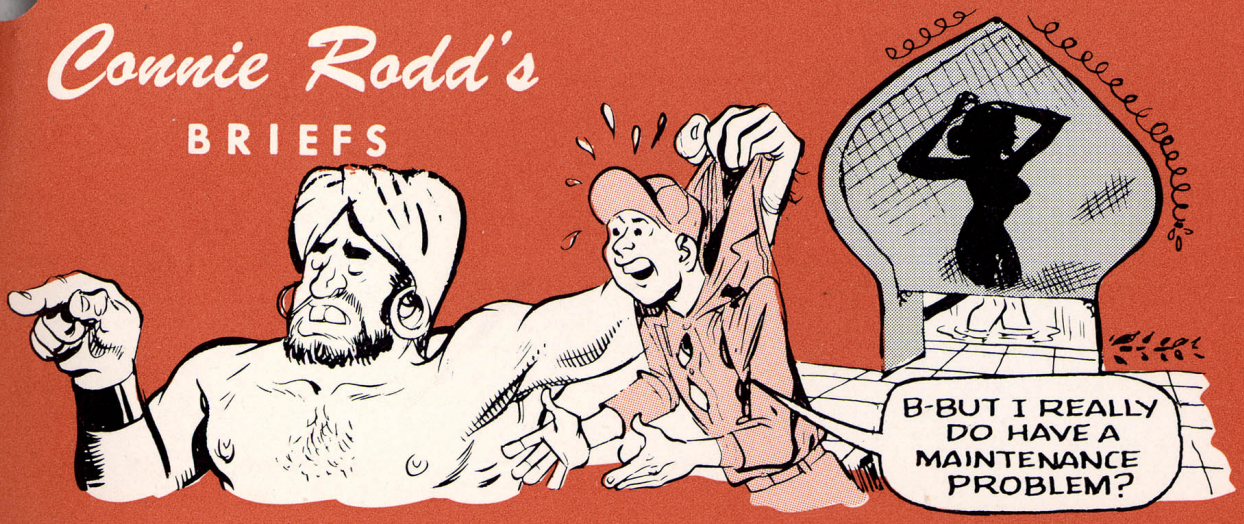


3. When the tread design is worn through to the tire body in several places.



Half-Mast

Connie Rodd's BRIEFS



THIS ONE'S A MUST!

. . . Speaking of ESC (see page 29) here's a late flash. DA Circular 750-1 (Feb 64) is hot off the press and it's loaded with info on the Equipment Serviceability Criteria pubs. There's a list of the new TM-ESC pubs to look for and how to get 'em. Don't miss it!

NOT MANY LEFT

The only old issues of PS Magazine left on the shelf are: Issues 1, 5, 6, 14, 18, 19, 20, 21, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134 and 135. If you need any of these, drop Sgt Half-Mast a note.

LOCATING SCHEMATICS

That fault locating indicator equipment you Nike-Hercules people have uses a distribution box with a 9978585 part number. Right? But you don't have any schematics for the box. Your support unit can help you out on this score. There's a schematic in Fig 247.47 of Ch 4 to TM 9-1450-250-35.

FOR M151 DRIVERS

TF 55-3412 . . . just released . . . is a jim-dandy film with some fine tips on operation of the M151 ¼-ton truck. Reports are still trickling in on driving accidents with the 151. Just contact your nearest Audio Visual Communication Center (new name for Army Film Exchange) if your outfit's got the M151.

HOLD YOUR ORDER

If the tail wheel on your Beaver (U-6) has the shakes and you're figuring on putting in a requisition for repair kit . . . FSN 1630-855-9071 . . . don't. It takes special tools, not authorized at organizational level, to put in new bushings and bearings. So, a change to TM 55-1510-203-20P (29 Mar 63) is in the works to remove the kit and put it into the field maintenance parts pub.

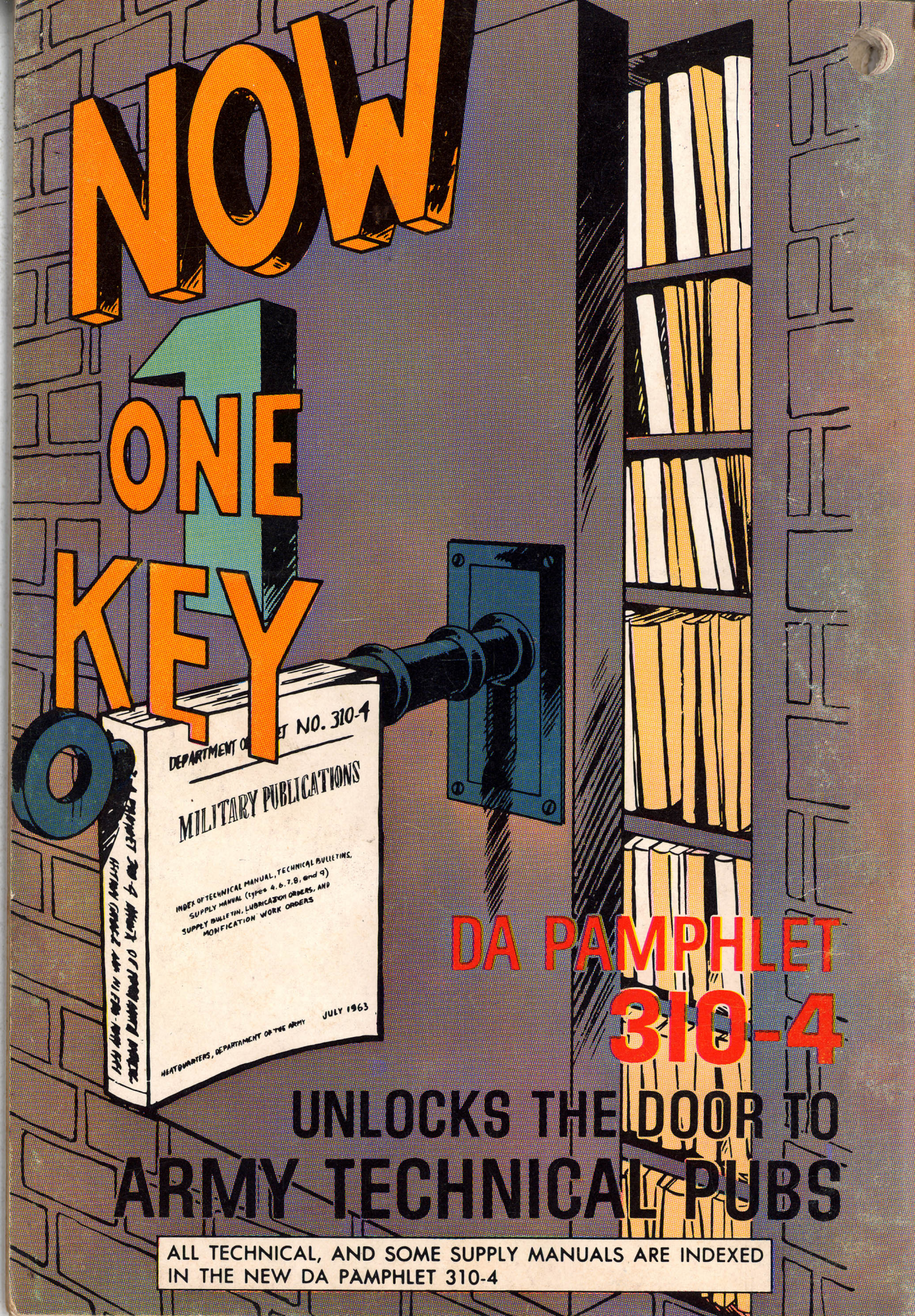
PS: ORDER ENOUGH

Does everybody in your outfit get a chance to read PS Magazine? If not, get a new DA Form 12-4 filled out and forward it thru channels to:

U. S. Army Publications Center
2800 Eastern Boulevard
Baltimore, Maryland 21220

Order enough copies.

Would You Stake Your Life right now on the Condition of Your Equipment?


NOW
ONE
KEY
DEPARTMENT OF ... NO. 310-4
MILITARY PUBLICATIONS
INDEX OF TECHNICAL MANUAL, TECHNICAL BULLETINS, SUPPLY MANUAL (types 4, 6, 7, 8, and 9) SUPPLY BULLETIN, LUBRICATION ORDERS, AND MODIFICATION WORK ORDERS
JULY 1963
HEADQUARTERS, DEPARTMENT OF THE ARMY
DA PAMPHLET
310-4
UNLOCKS THE DOOR TO
ARMY TECHNICAL PUBS
ALL TECHNICAL, AND SOME SUPPLY MANUALS ARE INDEXED
IN THE NEW DA PAMPHLET 310-4